Oxford Revise | Geography | Answers

Chapter 1

All exemplar answers given are worth full marks.

1.1 Heat

1.2 The data is in categories and a pie chart can display the categories and the proportion of deaths in each category very clearly.

1.3 The data is in categories and a pie chart can display the categories and the proportion of deaths in each category very clearly.

1.4 Volcanoes, earthquakes, tsunamis. Accept suitable alternative examples/answers.

2.1 D

2.2 Constructive

2.3 Tectonic hazards are found at plate boundaries. For example, there is a band on the west coast of North and South America and all around the Pacific Plate 'Ring of Fire' with a large cluster near Japan.

2.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Countries on the west coast of South America are at risk from earthquakes and volcanoes because the Nazca plate is moving towards the South American plate. This is a destructive plate boundary. The denser oceanic crust of the Nazca plate is being subducted beneath the less dense continental crust of the South American plate. As they move, the two plates get caught on each other and pressure builds up. When the plates finally jolt free, there are strong earthquakes. The Nazca plate also melts in the mantle and*

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mixes with seawater. This creates less dense magma which rises through cracks in the Earth's crust and escapes as a volcanic eruption.

3.1 B

3.2 Tropical storms, heatwaves.

Accept suitable alternative answers.

3.3 Constructive

3.4 Destructive

3.5 Conservative

3.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Some places might be wealthier than other places. This potentially makes them less at risk because they can afford to put protection in place such as earthquake-proof buildings and they are also more likely to have good emergency services. Some places are located in areas that are more hazard prone. For example, living near a plate boundary or on a river's flood plain will make a place more at risk from natural hazards.*

3.7 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

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Example answer: *A conservative plate boundary is made up of two tectonic plates sliding past each other, either in different directions or in the same direction, but at different speeds. As the plates move past each other, they get caught on each other. Pressure then builds up because the plates are still trying to move. Eventually they jolt free, and this releases energy and causes an earthquake.*

3.8 There are convection currents in the mantle. The plates are sitting on top of a moving mantle which makes the plates move.

Accept answers that refer to slab pull theory.

3.9 At constructive plate boundaries, two tectonic plates are moving apart from each other. As they move apart, a gap appears between the two plates. Partially mantled magma in the mantle rises to fill this gap creating new land and volcanic eruptions.

3.10 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *At destructive boundaries, a plate of dense oceanic crust is moving towards a less dense plate of continental crust. Because it is heavier, the oceanic crust is subducted beneath the continental crust. The oceanic crust is melted through heat resulting from friction but also when it enters the hot mantle. This melted crust also mixes with seawater, which makes it less dense and lighter than the mantle, so it rises to the surface through cracks in the Earth's surface as a volcanic eruption.*

4.1 20 208

4.2 220 000

4.3 4

4.4 1

4.5 17

Working:

Number of deaths in ascending order: 0, 1, 1, 2, 3, 4, 5, 6, 18, 2248, 220 000

Median: 4

Median of the bottom half: 1

Median of the top half: 18

Inter-quartile range: 18 –1 = 17

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4.6 The mean number of deaths is 20 208, which is a very high figure compared to the median and inter-quartile range. The mean is high because one earthquake has an exceptionally high number of deaths (220 000) compared to the others. This makes the mean high and gives a misleading picture of the risk of death from earthquakes.

4.7 Scattergraph

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Chapter 2

All exemplar answers given are worth full marks.

1.1 Any from: buildings/homes destroyed; buildings damaged; infrastructure damaged; roads blocked; cars damaged; power supply wires damaged.

Accept other suitable answers that refer to Figure 1.

1.2 Any from: people made homeless; cost of repairing buildings; people left without essential services like water and electricity; people forced to move; emotional trauma.

Accept other suitable answers that refer to Figure 1.

1.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 1 shows the primary effect of buildings being destroyed. This would result in secondary effects of economic loss for the businesses that use these buildings. In addition, people would be unable to buy goods from shops that have been destroyed. In the Christchurch earthquake in 2011, many schools were damaged and needed to be assessed for safety. This meant that 163 schools were closed for two weeks and children missed out on their education.*

1.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Tectonic hazards like earthquakes have primary effects such as those in Figure 1, where buildings and homes are destroyed. In the Nepal earthquake in 2015, for example, 600 000 buildings were damaged with tens of thousands of these dangerous and unusable. This primary effect, therefore, resulted in secondary effects. When homes are destroyed, people become homeless because they have no house to live in. In Nepal, 3 million people were homeless after the earthquake with half of these still living in temporary shelters two years after the earthquake. The primary effect of houses destroyed, therefore, caused longer-term secondary effects of homelessness. Figure 1 also shows the primary effect of infrastructure being destroyed. This leads to many secondary effects such as the cost of repairing all the buildings and infrastructure and the disruption this would cause for businesses. After the Christchurch earthquake in 2011, it cost the New Zealand government $40 bn to repair the buildings and infrastructure, again showing how primary effects led to longer-term secondary effects.*

1.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *I think that the primary effects of tectonic hazards are worse than the secondary effects. This is because all secondary effects are caused by primary effects. The 600 000 homeless people in Nepal 2014, for example, are only homeless because of the primary effect of their houses being destroyed, such as shown in Figure 1. Similarly the secondary effect of having to pay for $5 billion of damage is only because of the primary effect that saw infrastructure damaged and destroyed. Primary effects are also worse because primary effects include death which is much more serious than things like the cost of repairs or homelessness. In Nepal in 2014, for example, 9 million people died in the earthquake. While the 600 000 made homeless were seriously inconvenienced by their situation, this is preferable to death, suggesting that the primary effects are worse than the secondary effects.*

1.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The earthquakes affecting Christchurch in 2011 and Nepal in 2014 (primarily Kathmandu) had similar primary effects because in both earthquakes people died and were injured, and buildings and infrastructure were damaged. However, while the types of effects were similar, the scale of these effects were very different between the two countries. Christchurch suffered 185 deaths compared to 9000 in Nepal and 100 000 buildings were damaged in Christchurch compared to 600 000 in Nepal. Overall, the effects of the earthquake were much worse in Nepal.*

2.1 An immediate response would be calling out emergency services to try and rescue people trapped under the rubble in Figure 1.

2.2 A long-term response would be making the destroyed building in Figure 1 safe and restoring electricity supplies.

2.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *In Figure 1, buildings have been destroyed, potentially trapping people. This would require the immediate response of rescuing people but in the long-term, other responses are needed such as making that building safe are restoring power supplies for life to return to normal. In the Nepal earthquake in 2014, an immediate response was to establish tent cities for the homeless. However, it was important that long-term responses of building new earthquake-proof buildings also took place to rehouse people and make it safer for the future.*

2.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The responses to the 2011 earthquake in Christchurch, New Zealand were very effective. This is because New Zealand was well prepared for the earthquake and was able to respond quickly and effectively. As soon as the earthquake struck, well-trained rescue teams and emergency services assessed damage and searched for survivors. They put in place pre-existing plans and zoned different parts of the city*

according to safety to ensure members of the public remained safe. Chemical toilets were installed to reduce the potential spread of disease.

As a result of swift efforts, only 185 people died. The long-term rebuilding of Christchurch took longer, and businesses faced weeks of disruption. Nevertheless, when houses were rebuilt, it was to a tougher safety standard and 10 000 homes were affordable. Overall, therefore, both the short-term and long-term responses were effective.

Answers will vary depending on tectonic hazards studied.

3.1 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The 2014 earthquake in Nepal had terrible effects, with 9 000 people dying, 600 000 buildings destroyed, and 3 million people being made homeless. There were many factors that led to such devastation. One was that the earthquake was a high magnitude (7.8 on the Richter scale) and had a shallow focus. This meant that the damage was severe and widespread over a large area. In addition, Kathmandu had a high population density of 20 200 people per square km. This meant that many people were impacted and helps explain the high numbers of death and injuries.*

However, Nepal is also very poor country with a GNI per capita of only $2 500. This meant that people were living in poorly built houses that collapsed easily, causing much more damage and devastation. If Nepal had been a HIC then more buildings might have been earthquake-proof and there may have been fewer deaths. Overall, while the earthquake strength and high population density contributed to the high death toll, the most significant factor was the fact that Nepal was an unprepared LIC.

Answers will vary depending on tectonic hazards studied.

3.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *The earthquakes in Christchurch, New Zealand in 2011 and Kathmandu, Nepal in 2014 had different impacts. Social impacts in New Zealand included 185 deaths and 10 000 people made homeless compared to 9000 deaths and 3 million homeless in Nepal. Economically, the cost of damage was significantly higher in Christchurch. The differences in impacts could be explained by several factors.*

Firstly, the Nepal earthquake was stronger at 7.8 magnitude (compared to 6.3 in New Zealand). However, the New Zealand earthquake was much shallower, so the earthquake strength alone does not explain the differences.

Secondly, the population size and density in Christchurch was much lower than Kathmandu. This is significant because it meant fewer people were at risk in Christchurch. However, New Zealand is much wealthier and could afford earthquake-proof buildings. Even if population density was higher, it would not have led to more deaths because fewer buildings collapsed. New Zealand also did not rely on aid to respond to the earthquake. Emergency serves were better trained and equipped and responded more effectively.

The higher cost of damage in Christchurch can also be explained by wealth. Christchurch had more expensive buildings and infrastructure so therefore it cost more when this was damaged. Overall, wealth explains the different impacts better than other possible explanations.

Answers will vary depending on tectonic hazards studied.

4.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Risks are reduced because people are calm and know what to do. Therefore they act in a way that ensures their safety. For example, Figure 2 shows children taking cover under a table in an earthquake drill. Knowing to do this would mean they would be protected from falling items and building collapse that may happen in an actual earthquake. This would ensure they are safer, and risks posed by the earthquake are reduced.*

4.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Planning for a tectonic hazard like a volcano can reduce its risks. For example, evacuation can take place when the threat of eruption is high, thus ensuring people are safe and not at risk. Similarly, exclusion zones can be established to ensure people do not put themselves at risk. For earthquakes, planning can involve conducting earthquake drills like the one in Figure 2, which mean that when an earthquake hits, people are calm and know what to do to keep themselves as safe as possible.*

Planning also involves the preparation of emergency services, who can be trained in rapid response and store equipment in secure locations. For both volcanoes and earthquakes, this ensures that people injured or trapped receive help quickly, reducing risks associated with the hazard. Planning also involves building earthquake-proof buildings with shock absorbers in their foundations. These buildings do not collapse in earthquakes which reduces the number of deaths and therefore the risks from the hazard.

4.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *People might continue to live in hazard-prone areas because they believe that the risks have been successfully managed and mitigated. For example, because of things like earthquake drills (Figure 2), earthquake-proof buildings or monitoring of volcanic activity, people might not perceive themselves being at risk. This means they are more likely to stay living in these areas.*

There are also economic reasons for living in hazard prone areas. In the case of volcanoes, the soils are very fertile, so farming communities will continue living there, or there may be a large tourist industry with the

natural scenery or volcanic springs providing well paid employment. Economic incentives when coupled with feeling safer help explain people remaining in these areas.

4.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Scientists can use remote sensing, satellites, and lasers to monitor changes in the volcano's shape. Before a large eruption, volcanoes often start to bulge as pressure builds in the magma chamber. Changes in shape can therefore indicate a risk of a dangerous eruption. Seismographs can also be used to monitor earthquake activity, as there is normally an increase in nearby seismic activity just prior to a volcanic eruption.*

4.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The soil around volcanoes is very fertile and excellent for farming. It is fertile because of the volcanic ash that is deposited on the land, which contains many minerals like potassium. People live near volcanoes therefore because it is ideal for growing crops and agricultural production. Volcanoes also provide spectacular scenery and attractions like thermal baths. People live near them to work in the tourist industry as well as enjoying the spectacular landscapes themselves.*

4.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Monitoring and prediction is one of the least effective ways of reducing risks from earthquakes. This is because monitoring can only give a general pattern of past earthquakes and accurate predictions of earthquakes are impossible.*

Protection through building earthquake-proof buildings is very effective. Installing shock absorbers to allow the building to sway with the earthquake prevents building collapse and can save many lives. However, earthquake-proof buildings are very expensive, and it is difficult to make buildings earthquake-proof after they have been built. This means that protection must be used alongside other methods to reduce risk.

Preparation through education, earthquake drills and training for emergency services is cheap and effective. This makes it suitable for LICs as well as HICs. Education means people can have earthquake kits with emergency supplies and ensures they react calmly to a tectonic event, potentially saving lives. Training emergency services and stockpiling emergency resources ensures quick and effective response times with essential medical supplies on hand significantly reducing the impact of a hazard. Overall, protection through earthquake-proof buildings is the most effective method reducing risk but because it is not always suitable, planning and education is the most effective for most societies.

5.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *At destructive plate boundaries, a denser oceanic plate moves toward a less dense continental plate. Because it is heavier, the oceanic plate is subducted beneath the continental crust. The two plates continue to move toward each other but get caught on each due to friction. Pressure builds up as the plates continue to move and eventually the plates jolt free. When this happens, energy is released as an earthquake.*

5.2 Constructive and destructive margins

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Chapter 3

All exemplar answers given are worth full marks.

1.1 Ferrel

1.2 The climate will be hot and dry with clear skies.

1.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 2 shows a wet and humid climate. At the equator, warm air is rising. This is because the Sun is directly overhead and very intense. It heats the ground, which warms the air above it. As the air warms, it starts to rise into the atmosphere. As it rises, it cools and condenses into towering cumulonimbus clouds, causing heavy rain and a wet climate. The heat and water vapour in the atmosphere give the humid conditions.*

1.4 Trade winds

1.5 Westerlies

1.6 At 30°S, there is sinking air and high atmospheric pressure. At the equator, there is rising air and low atmospheric pressure. Air moves from areas of high to low pressure, meaning wind blows from 30°S toward the equator.

1.7 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The UK is situated roughly where the warm air moving north in the Ferrel cell meets cold air moving south in the Polar cell. The warm air is less dense than the cold air, so it is forced up over the cold air of the Polar cell. As it rises, it cools and condenses, forming clouds and rain. This is one reason why the UK often experiences rainfall.*

1.8 Antarctica is a desert because it receives very little precipitation. This is because it is situated where air from the Polar cell is sinking, giving high atmospheric pressure. As air sinks, it warms and its ability to hold water increases, meaning that precipitation is less likely.

2.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The 2011 earthquake in Christchurch, New Zealand, was at a conservative plate boundary. Convection currents in the mantle meant that the Australian and Pacific tectonic plates were sliding past each other. The movement was not smooth, and the plates get caught on each other, causing pressure to build up. Eventually the plates broke free, releasing the pressure as a powerful earthquake.*

Answers will vary depending on tectonic hazards studied.

2.2 A

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Chapter 4

All exemplar answers given are worth full marks.

1.1 D

1.2 72

1.3 A

1.4 One from: the sea temperature must be at least 27°C; the sea must be 50 m deep.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Tropical storms form when evaporating warm oceans of at least 27°C lead to rising air at the ocean's surface. As the air rises, it cools and condenses, forming storm clouds. Trade winds and the Coriolis effect start the storm spinning and it moves across the ocean, drawing in more warm moist air as it moves. Over a period of days, the storm draws more energy from the warm ocean and a tropical storm is formed.*

1.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *On the outer edge of a tropical storm, there are gusts of wind and showers. As you travel in toward the centre, there are bands of towering clouds. The wind speed increases up to 100 km an hour and there is very heavy rain and thunderstorms. As you approach the eye wall, there are winds of 120 km and hour and more intense rain, thunder, and lightning. At the very centre of the tropical storm is the eye, where the weather is calm with no clouds, and sometimes sunshine.*

2.1 90

2.2 29

2.3 90

2.4 15

Working:

Number of storms in ascending order: 75, 77, 83, 84, 88, 90, 94, 95, 98, 103, 104

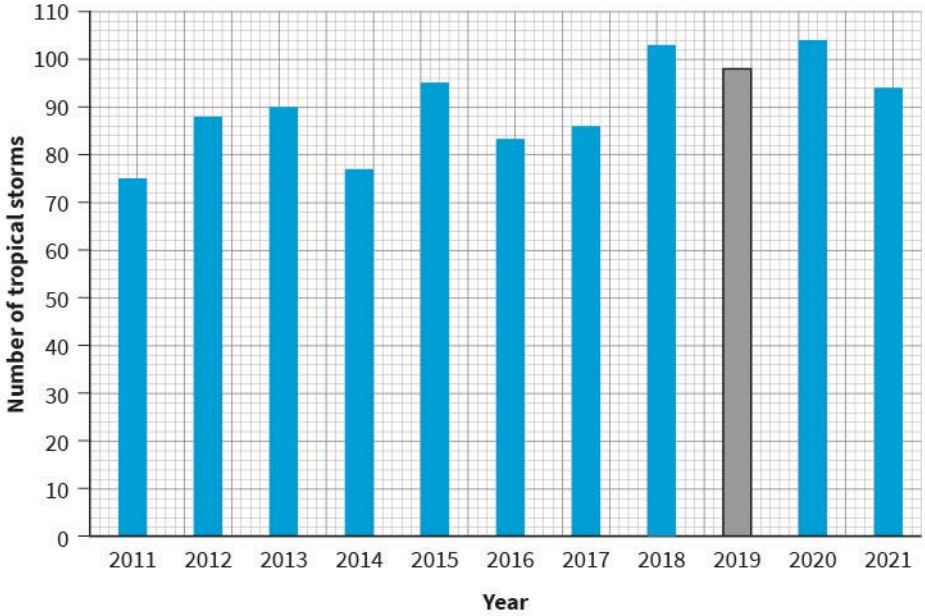
Median: 90

Median of bottom half: 83

Median of top half: 98

Inter-quartile range: 98 – 83 = 15

2.5 The bar chart should be completed as below:



3.1 Primary effects are effects that are a direct result of the tropical storm.

3.2 C

3.3 A

3.4 **Accept any of the following:** electricity supply destroyed; water supply damaged; 33 million coconut trees washed away.

3.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One secondary effect of a tropical storm might be homelessness. If a tropical storm flattened vast areas of a country, this would include destroying people's homes, which would leave them homeless. A second secondary effect might be illness from disease. Tropical storms cause flooding, which can mean raw sewage and waste in the water supply and case diseases like typhoid and cholera.*

Accept other suitable answers.

3.6 **Accept any two from:** people could suffer from diseases like cholera; people may be made homeless; people would lose their jobs and income if their business was destroyed; people may die; people may be injured.

3.7 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One reason why deaths might have occurred during the storm would be due to the storm surge. Tropical storms often bring a wall of water to the shore, which causes flooding, and it is possible that people will drown in the torrent of water. A reason why deaths might occur after the tropical storm would be disease. When water systems are damaged, flood water can wash out sewage systems, and deadly diseases like cholera, typhoid, or dysentery can flourish.*

3.8 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One way the environment was affected was through the destruction of ecosystems and habitats. The storm surge would have flooded large areas of land and Figure 4 states that this destroyed 33 million coconut trees. The environment might also have been damaged through pollution. Flood water mixes with water in sewage systems and this means that large areas of land are covered in dirty, polluted water.*

3.9 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *I slightly disagree with the statement. This is because secondary effects are much longer lasting than primary effects and impact people for many years making them more significant.*

Some people might argue that primary effects are more significant because they include deaths and injuries to people. However, secondary effects include things like hospitals being overcrowded, people being homeless and exposed to the elements, and the enormous costs of dealing with the aftermath of a tropical

storm. In the long run, the costs of tackling these issues can also lead to people dying. For example, countries might get into debt when something like the coconut industry is destroyed. This means the country cannot afford basic healthcare which leads to more infant mortality in the long run. After Typhoon Haiyan in the Philippines 6300 people were killed but 6 million people lost their jobs and repair costs were enormous. Short-term deaths are significant, but the secondary impacts would lead to many deaths in the future which is why I slightly disagree with the statement.

Arguments agreeing with the statement should be credited if they are supported with appropriate evidence.

3.10 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms

Marks	Description
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I slightly agree with the statement because the way a country responds in the long term will affect more people than immediate responses. However, immediate responses are still important.*

For example, after Typhoon Haiyan hit the Philippines in 2013, immediate responses like US helicopters completing search and rescue and the Red Cross supplying 1.1 million people with water were important in saving many lives because they provided essential lifesaving services when clean water was not available. However, the long-term response of planting mangrove forests and the 'Build Back Better' scheme building typhoon resistant housing will save many more lives in the future because the social and economic impact of future typhoons will be reduced. Mangrove forests will slow the storm surge and people will be safer in their houses and communities so the ability of the Philippines to cope will all future typhoons is improved.

Similarly, short-term temporary tents are important but so is the speed of long-term rehousing and getting people working again to provide food and shelter to their family in a sustainable way. Getting the economy back working means money is being earnt that can pay for things like healthcare programmes. Therefore, while immediate responses are important, the effectiveness of long-term responses is more important to the overall impact of the tropical storm.

Arguments disagreeing with the statement should be credited if they are supported with appropriate evidence.

3.11 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Typhoon Haiyan, which struck the Philippines in November 2013, was one of the strongest and most devastating tropical storms in history. One million homes were destroyed, essential infrastructure was damaged and 6300 people were killed. The USA helped with search and rescue and the Red Cross supplied a million people with clean water. This was effective because it meant that diseases like cholera that often follow tropical storms were effectively managed and many lives were saved by people not drinking dirty water. 1 200 evacuation centres were set up, which meant that aid could be effectively targeted at particular places and more people were able to receive it quickly and efficiently.*

Long-term responses were also effective. Many people had lost their source of income, but the UN 'Cash for Work' program paid people to clean up debris. This meant the clean-up operation was quicker (reducing the spread of disease). It also meant that people were able to earn money to spend in the businesses that did survive, which reduced the long-term impact on the economy.

Long-term planning also took place with mangrove forests planted to act as a barrier against future storm surges and better planning took place to ensure new buildings were not placed in vulnerable areas. This is effective because it means that the impact of future typhoons will be more manageable.

Overall, the immediate responses were effective in saving lives and restoring the economy and the long-term responses helped better protect the Philippines for the future.

3.12 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *I strongly agree with the statement. This is because people are affected through serious consequences like death while environmental damage is often temporary and can be restored. Typhoon Haiyan in the Philippines in 2013 killed 6 300 people, which is clearly a serious consequence for those individuals, including consequences for family members such as children being orphaned. People also lose their homes and their sources of income which means that their health and chances of a good quality of life suffers over a long period of time.*

Typhoon Haiyan did have environmental impacts, such as the pollution of land and water supplies, but there were consequences for people from this with the spread of diseases like dysentery. In the long run, the land can be cleaned and decontaminated but the short-term impact on people is more significant.

Similarly, 33 million coconut trees were destroyed. These trees can be replanted, and the ecosystem regenerated, but in the meantime hundreds of people have lost a source of income. This might mean that they are not able to afford to send their children to school or eat a healthy diet, causing illness and higher mortality rates. Therefore I think that the impact is more significant for people than for the environment.

Arguments disagreeing with the statement should be credited if they are supported with appropriate evidence.

4.1 This would be effective because it is on stilts, which would protect people from flooding. It is also large enough to provide shelter for a high number of people.

4.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The impact of tropical storms can be reduced by protection methods like building special storm shelters shown in Figure 5. These are effective because they are built of strong materials like concrete and raised above ground level to protect people from flooding. They are also relatively cheap to build, which is especially important in LICs like Bangladesh*

Planning can also be used to prepare for future tropical storms. In the Philippines after Typhoon Haiyan, they planted mangrove forests along the coastline. These forests will provide a natural barrier against storm surges in future tropical storms. This is important because storm surges and the rapid flooding they bring are one of the most destructive impacts of tropical storms.

4.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Prediction allows people to be evacuated away from where the tropical storm will hit. This can take place in the days before the tropical storm hits and saves many lives because people are moved away from the most dangerous areas. Prediction also allows people to make preparations such as boarding up their property. This reduces the impacts because there will be less damage and fewer repairs will need to be made.*

4.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Planning can help reduce the effects of tropical storms because it allows people to be prepared and know what to do when a tropical storm approaches. For example, education can inform people how to keep an emergency supply kit with basic medical equipment and water purification tablets. Understanding that water is often polluted by flooding from tropical storms and needs to be treated before it is safe can save lives through preventing diseases like typhoid and cholera.*

Protection is also important. Sea walls can be built to prevent storm surges from flooding settlements. This is important because storm surges are one of the most devastating impacts of tropical storms and preventing the rapid flooding these bring can save lives and protect against property damage. This reduces the social impacts like death and disease spread by flood water and also the economic impacts because there are fewer rebuilding and clean-up costs.

4.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Satellite images can be used to respond to tropical storms because they allow the storm to be tracked. This means that a projected path can be established, and predictions made about where the tropical storm will hit land. Doing this means that preparations can be made to save lives, either through early evacuations to remove people from the danger zone, or through ensuring people have sufficient supplies and a safe shelter for when the tropical storm hits.*

5.1 Hot deserts are found here because this is where the Hadley and Ferrel cells meet. There is sinking air and high pressure, leading to clear skies and low precipitation. It is hot because it is still quite close to the equator, so the Sun is directly overhead and there is high insolation.

5.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Planning can reduce the impacts because people can undergo earthquake drills. This means that they will know to shelter under tables or evacuate the building quickly, which means it is less likely they will be injured from falling objects.*

Protection can reduce the impacts by building earthquake-proof buildings. These have seismic isolators in their foundation so that the building sways with the earthquake and does not collapse. This means that people are not killed and injured by collapsing buildings and falling debris.

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Chapter 5

All exemplar answers given are worth full marks.

1.1 Weather that is significantly hotter, colder, wetter, or windier than normal.

1.2 **Accept any from:** thunderstorms; prolonged rainfall; drought; heatwaves; heavy snow; extreme cold; strong wind and gales.

1.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The UK's temperature is becoming hotter. Ten of the hottest years since records began have occurred since 2002 and the highest ever recorded temperature was in 2022. It is also predicted that the UK will experience more rainfall and flash flooding in the future. The Met Office predicts an extra two days of extreme rainfall a year if temperatures increase by 2°C.*

1.4 B

1.5 January

1.6 888 mm

1.7 120 mm

1.8 73.5 mm

1.9 58 mm

Working:

Rainfall values in ascending order: 19, 24, 41, 47, 59, 73, 74, 87, 98, 106, 121, 139

Median: 73.5

Median of bottom half: (41 + 47) ÷ 2 = 44

Median of top half: (106 + 98) ÷ 2 = 102

Inter-quartile range: 102 – 44 = 58

2.1 C

2.2 B

2.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *I think the environmental effects of extreme weather events are worse than the economic effects. This is because the environmental effects are normally longer lasting and in some cases irreversible. In Figure 3, the economic effects include disruption to businesses caused by road closures and damaged electricity supplies. Although this is inconvenient and costly, it can be repaired and restored relatively quickly compared to the time it would take to regrow all the trees brought down.*

When the Somerset Levels flooded, the damage cost over £100m and £200m was lost in the tourism industry. This is clearly a significant cost and the need to spend money on repairs means there is less money available for environmental spending. However, the polluted water caused health issues, the polluted soils led to more economic losses in agriculture, and the damage to ecosystems took years to recover, meaning the environmental effects are worse.

2.4 A physical cause of the Somerset Levels floods from December 2013 to February 2014 was prolonged heavy rainfall, with January 2014 being the wettest month since records began.

Accept other answers that refer to saturated soils increasing surface run off, or high tides preventing the river water escaping out to sea.

Answers will vary depending on weather events studied.

2.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *A physical cause of the Somerset Level flood in in winter 2013-–14 was prolonged heavy rainfall, meaning the soils were saturated. This meant that additional rainfall could not infiltrate the soil and ran off quickly into rivers, causing flooding. A human cause was that the River Tone had not been dredged for twenty years. This meant that the river channel capacity was reduced so the river was unable to hold the excess water caused by increased precipitation.*

Answers will vary depending on weather events studied.

2.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The flooding in the Somerset Levels during the winter of 2013–14 had many economic effects. Firstly, the rising flood waters caused £100m worth of damage with 80% of businesses affected by the flood. Businesses were affected because their premises or stock was damaged. This meant they were unable to open. They were not able to earn any income and many closed permanently. The Bristol to Taunton railway was damaged. As well as the repair costs, a consequence of this was that travel was disrupted, preventing people getting to work.*

Answers will vary depending on weather events studied.

2.7 One immediate response to flooding in the Somerset Levels was residents using sandbags to protect their property. This involved using bags of sand to build walls outside their houses to prevent the water entering.

2.8 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One management strategy used after flooding in the Somerset Levels was that the River Tine and Parrett were dredged at a cost of £6m. This strategy was needed because the rivers had many years of sediment deposits that had reduced the channel capacity. This was a cause of the floods because the rivers could not hold enough water. Dredging the rivers meant that in future extreme weather events, the rivers could hold more water, thus preventing flooding.*

Answers will vary depending on weather events studied.

2.9 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Management strategies for flooding in the Somerset Levels have been very effective at reducing risk. This is because they put in place a long term 20-year strategy covering many causes of flooding at a cost of £100m.*

One part involved dredging the River Tine and River Parrett. This means that the rivers will be able to hold more water in the future and reduce the chance of flooding. However, this strategy is not totally effective because over time the rivers will fill with silt and the channel will need dredging again.

Another strategy was raising the levels of some roads. Although this does not prevent flooding, it is effective because it means that flooding will cause less disruption as roads will be above the levels of flood water. This means businesses will be able to stay open and people can still travel to work. It will also help emergency services distribute aid and reach people in need during any flood event.

The management strategies are therefore effective because some reduce the risk of flood, while others reduce the disruption that flooding brings.

3.1 Volcanic hazards can be reduced by setting up an exclusion zone so that people are kept away from a potential eruption and are not placed in danger.

Accept other suitable answers.

3.2 Monitoring means that the path of the storm can be predicted. This means that evacuation orders can be targeted at particular places, reducing the effect on human life.

Accept other suitable answers.

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Chapter 6

All exemplar answers given are worth full marks.

1.1 D

1.2 The area covered in Arctic sea ice has decreased between 1979 and 2014, from 7.2 million km^2 to 5 million km^2. The trend is the area is getting smaller, but it fluctuates, and in some years such as 1996 the area increases.

1.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Ice cores provide another piece of evidence for climate change. From the concentration of CO_2 trapped in ice cores, scientists can calculate past temperatures going back 1000s of years. The calculations show the temperatures are increasing.*

Global temperature data is another piece of evidence. Weather stations around the world gather temperature data, which shows that the last nine years have been in the ten hottest years on record, suggesting that climate change is taking place.

1.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Human activity has contributed to climate change through burning fossil fuels as shown in Figure 2. When fossil fuels are burnt, they release CO_2, which is a greenhouse gas. With more CO_2 in the atmosphere, more of the Sun's energy is trapped in the atmosphere. This causes a rise in temperatures and climate change.*

Figure 2 also shows deforestation. This contributes to climate change because when trees are cut down, they release CO_2 which, similar to burning fossil fuels, means more greenhouse gases in the atmosphere and less energy escaping as long wave radiation. Human activity also releases greenhouse gases through agriculture, in which fertilisers and livestock release methane. This is also a greenhouse gas, which adds to the layer of greenhouse gases in the atmosphere and increases global warming and climate change.

1.5 Ice cores show changes in temperature via the amount of CO_2 trapped in the ice. Sea levels are rising, and average global temperatures are increasing.

1.6 A painting might be unreliable because the artist is giving a personal impression of the weather. This makes it a subjective representation that is not based on scientific data.

2.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Orbital changes cause changes in Earth's climate by changing the distance between Earth and the Sun and therefore changing the amount of energy Earth receives. Eccentricity changes the orbit from a circle to an oval, altering the distance to the Sun. Obliquity changes the angle of tilt, meaning Earth is sometimes pointing more toward the Sun and receiving more energy. Precession is a wobble as the Earth*

spins, which changes the point in the orbit where the Earth is pointing toward the sun. The three cycles combine to cause gradual changes in climate.

2.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Large volcanic eruptions emit gases like sulphur dioxide and volcanic ash high into the atmosphere. This creates a large cloud in the atmosphere, which spreads around the world and blocks the Sun's energy from reaching the Earth. This means that less energy reaches the Earth and results in a cooling in Earth's temperature lasting two to three years.*

2.3 Solar output varies with Sun spots on the Sun's surface. These are dark spots which appear in 11-year cycles and emit more energy than usual. Earth's temperature increases in periods with high Sun spot activity because more energy is received.

2.4 Agriculture uses fertilisers that releases a greenhouse gas called methane. When methane is released, it increases the quantity of greenhouse gases in the atmosphere, meaning more of the Sun's energy is trapped on Earth, contributing to climate change.

2.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Deforestation contributes to climate change in two ways. Firstly, trees absorb carbon dioxide, thereby reducing the quantity of CO_2 in the atmosphere. Carbon dioxide is a greenhouse gas that traps energy from the Sun in the atmosphere and increases global temperatures. If trees are cut down, they*

are not able to remove this CO_2 from the atmosphere. Secondly, cutting down trees releases the carbon stored in the vegetation back into the atmosphere. This adds to the layer of greenhouse gases, meaning more energy is trapped and global temperatures increase.

2.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I strongly agree with the statement that climate change since 1850 has been caused by human activity. This is because the graph shows a clear link between CO_2 concentrations and average global temperatures. From the year 1000 to 1750, CO_2 concentrations remained constant at around 280 parts per million (ppm). Average global temperatures fluctuated but within quite a narrow range of 13.6°C to 13.8°C.*

However, CO_2 concentrations increased rapidly after 1900, to 370 ppm in 2000. This has been accompanied by a similar sharp increase in average global temperatures from 13.6°C in 1900 to 14.4°C in 2000. During this period, there has been a large expansion in human-produced CO_2 emissions as countries have burnt fossil fuels like coal for energy, deforested large parts of the world, and released gases like methane and nitrous oxide through agriculture. All these gases are greenhouse gases, which trap long-wave radiation and warm the Earth's atmosphere, helping explain the large increase in Earth's average temperature.

There may be natural reasons for changes such as increased Sun spot activity increasing the amount of energy reaching Earth, but the close link between the temperature and CO_2 lines suggests that human activity is to blame.

Arguments disagreeing with the statement should be credited if they are supported with appropriate evidence.

3.1 In the centre of a tropical storm is the eye. Conditions are calm, with clear skies, warm temperatures, and no wind.

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One short term response to Typhoon Haiyan was the Red Cross providing 1.1 million people with water. This reduced the impact on people because it made the spread of illness and disease like dysentery and typhoid less likely. These diseases are spread when people drink contaminated water, so providing people with clean water meant that people stayed healthy.*

A long-term response was a UN Cash for Work programme to clean up the debris. This reduced the impact on people because people were earning an income, allowing food and other essentials to be purchased and helping them return to normal life more quickly.

3.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *The Somerset Level floods in the winter of 2013–14 resulted from a mixture of physical and human causes, but I think that physical causes were more to blame than human causes.*

Physical causes included prolonged heavy rainfall with January 2014 being the wettest January on record. The prolonged rainfall meant that soil was saturated, which meant water could not be absorbed into the soil and ran off straight into the River Tone, causing flooding. This is the most important cause of the floods because without heavy rain there would not have been any flood at all.

However, human causes made this worse. The River Tone had not been dredged for twenty years. If it had been dredged, the capacity would have been greater, which may have reduced the severity of the flood.

Another physical cause was extremely high tides that preventing river water escaping out to sea. This meant that even if the river had been dredged, it was likely the flooding would still have taken place, which means that physical causes were more significant than human causes.

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Chapter 7

All exemplar answers given are worth full marks.

1.1 A

1.2 Countries projected to have extreme water shortage are most countries in North Africa and the Middle East like Egypt and Saudi Arabia, and parts of central Asia like northern China. There are other isolated areas such as in South Africa Northern Chile and parts of western United States.

1.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One issue for people caused by climate change is the extreme water shortages shown in Figure 1. Water shortages may be due to decreased rainfall, increased evaporation or melting glaciers but in all cases, this means there is not enough water to drink or to grow crops. This can lead to food shortages and malnutrition and in extreme cases forced migration as climate refugees search for places to live with plentiful water supplies.*

Another issue for people is coastal flooding caused by sea level rise. In Vietnam, coastal flooding is threatening rice production, potentially causing food shortages for 1 million people. This would also have an economic effect on people as rice production can be sold and these people will be without a secure income.

1.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One way the environment will be affected is increased intensity of tropical storms. This is because of warmer ocean temperatures providing a greater energy source for tropical storm formation. A second way is sea level rise. Warmer temperatures are causing thermal expansion and melting glaciers and polar ice caps are adding more water to the world's oceans, causing the sea level to gradually rise.*

1.5 14% of species may become extinct.

Accept other answers that refer to Figure 2.

1.6 People who live in coastal settlements might experience coastal flooding.

Accept other answers that refer to Figure 2.

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I think that the effects of climate change on the environment are more concerning than the effects on people. This is because the effects on people are the result of environmental effects of climate change.*

For example, Figure 2 talks about one way that people will be affected by climate change: increased flooding in coastal areas in places like Bangladesh, forcing people to move inland. However, this is only happening because of the environmental effect of rising sea levels, which in turn is caused by rising global temperatures. Rising temperatures leads to thermal expansion and melting glaciers and ice caps, causing sea levels to rise. This increases the frequency of coastal flooding. The environmental effect is more concerning because it is the cause of the effects on people.

Similarly, people in northern Africa are affected by extreme water shortages. But this is caused by the environmental effect of changing rainfall patterns and evaporation of water from lakes. So again the environmental effect is more concerning because it caused the effects on people.

2.1 Mitigation strategies try to reduce the causes of climate change like removing CO_2 from the atmosphere, whereas adaption strategies try to adjust to climate change, such as planting drought resistant crops.

2.2 Using alternative energy sources like hydroelectric power (HEP).

Accept other suitable answers.

2.3 Building coastal defences like sea walls.

Accept other suitable answers.

2.4 Nuclear energy is an alternative source of energy. A disadvantage is that the nuclear waste produced is expensive and difficult to dispose of.

Accept other suitable answers.

2.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Alternative energy production like wind energy can help manage climate change because it will reduce the amount of CO_2 released into the atmosphere, since it is not a fossil fuel. CO_2 is a greenhouse gas that traps the Sun's energy and warms the climate, so reducing this can help manage climate change. International agreements set legally binding targets for countries to reduce CO_2 emissions, encouraging the development of low carbon economies and thus helping to manage climate change.*

2.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Carbon capture is a technology that captures and removes CO_2 from the atmosphere. The removed CO_2 is then stored underground. This helps to manage climate change because CO_2 is a greenhouse gas that traps long-wave radiation in the Earth's atmosphere and causes climate change. Removing CO_2 means less long-wave radiation is trapped and global warming is reduced. Planting trees works in a similar way. As trees grow, they remove CO_2 from the atmosphere as part of photosynthesis and store this carbon in their trunks, thus reducing the amount of greenhouse gases in the atmosphere.*

2.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Carbon capture could potentially be effective in mitigating climate change but currently it is not effective. Carbon capture works by using technology to capture carbon at power plants and prevent it entering the atmosphere. However, current technology is unable to capture all the carbon emitted. Large quantities still end up in the atmosphere, so it is only partially effective.*

Planting trees will also capture carbon in the atmosphere because trees absorb carbon as they grow. However, critics argue that to plant the quantities of trees needed to make a significant difference would require up to 1 billion new hectares of forest, which could take 1 000 years to grow. Therefore both these approaches work in theory but in practice they are unlikely to be highly effective in mitigating climate change.

3.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Carbon capture helps mitigate climate change by removing CO_2 from the atmosphere. Some people might disagree with investing in this technology because currently it is unproven to work well enough to have a significant impact. Carbon capture investment might give the impression that we can carry on burning fossil fuels without increasing global warming and this might mean less money is invested in much more effective technologies like wind or solar energy.*

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Drought resistant crops can be planted to adapt agricultural systems and manage climate change. These crops are able to grow in areas of water shortage, ensuring food production can continue in drought-prone areas.*

New irrigation techniques like drip irrigation can also be used. These techniques target plants and roots systems, meaning water is used much more efficiently. This helps to manage the water shortages that are one of the impacts of climate change.

3.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary

Level	Marks	Description
	0	No relevant content

Example answer: *Changing agricultural systems include planting drought resistant crops. Climate change is causing rainfall patterns to change and evaporation rates to increase, which is making more of the world prone to drought. Planting crops that can grow in areas of water shortages means that food supply will be less impacted.*

Agriculture can also use more efficient irrigation like drip irrigation so that water is used more efficiently and the water shortages caused by climate change are better managed. Water supply can also be managed through reducing water consumption and improving water storage and recycling.

Consumption can be reduced through using things like aerators on taps which reduce the amount of water used when showers or hoses are used. Water can also be stored in water bins so that tap water is not used on crops or in the garden. Both these techniques reduce the consumption of water and help to manage the water shortages caused by climate change.

3.4 Building defences like sea walls can reduce the risk of rising sea levels because the sea walls will prevent coastal erosion and flooding. Housing can also be built on stilts so that it remains safe from floodwater.

3.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I mostly agree with this statement. This is because it is only through mitigation strategies that the effects of climate change can be brought under control in the long run. Reducing our carbon emissions will stop the ever-worsening impacts of climate change. For this reason, mitigation strategies like legally binding targets for all nations to reduce CO_2 emissions are essential because they encourage other mitigation strategies and quicken the pace of switching to greener energy sources like wind power that do not emit CO_2.*

However, adaption strategies are also important. This is because the effects of climate change are being felt today and communities urgently need help in adapting to these. Given access to drought resistant crops and benefitting from water transfer schemes are essential for community survival. Adapting is important in the short term, therefore, but we cannot adapt indefinitely. This is why mitigation is more important because that is the only way the impacts will be reduced in the long run.

Arguments disagreeing with the statement should be credited if they are supported with appropriate evidence.

4.1 Tropical storms are found in these bands because that is where se temperatures reach 26.5°C. This is minimum sea temperature for tropical storms to form because warm rising moist air is needed to generate the energy for a tropical storm.

4.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *A number of long-term management strategies were put in place after the Somerset Levels floods of winter 2013–14.*

Firstly, a twenty-year Somerset Moors Flood Action Plan was developed at a cost of £20m. This included spending £6m dredging the Tine and Parrett rivers. This will reduce the risk of flooding in the future because it will increase the channel capacity of these rivers. This means they can hold more water when the area experiences extreme rainfall.

In addition, several main roads are being raised. This will not stop flooding, but it will reduce the social and economic impacts of flooding because traffic will now be above flood waters and will not be disrupted. The closure of main roads in the 2013–14 floods meant that people could not get to work. This will reduce the risk of this happening in the future.

Answers will vary depending on the weather event studied.

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Chapter 8

All exemplar answers given are worth full marks.

1.1 B

1.2 D and E

1.3 Algae

1.4 Species that feed on the algae such as mayflies or pond snails would decrease in number. This would then have an effect further up the food chain with frogs, eels and kingfishers all suffering a decrease in numbers.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Energy from the sun is converted into biomass by producers such as algae in Figure 1. Energy then moves up through different trophic levels as consumers eat insects through the food chain. In Figure 1, mayflies eat algae, which is a transfer of energy. Mayflies are then eaten by frogs, moving energy further up the food chain and then finally kingfishers consume frogs.*

1.6 Decomposers feed on dead plants and animals breaking down organic matter and making nutrients available to primary producers.

1.7 Producers are plants that make their own food by converting energy from the sun into biomass. The rest of the food chain then feed on the producers.

2.1 A

2.2 Coniferous forests are found mostly in a band stretching east to west in the northern hemisphere in Canada, northern Europe and central and southern Russia.

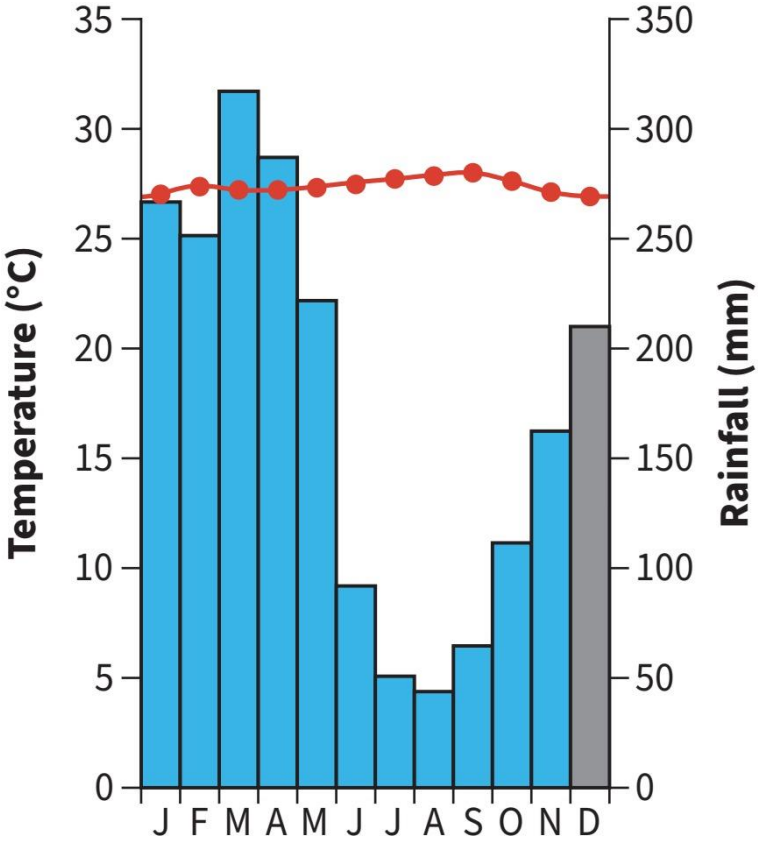
2.3 Cool summers

Accept other suitable answers.

2.4 They have broadleaf trees that lose their leaves in winter.

Accept other suitable answers.

3.1 The climate graph should be completed as below:



3.2 D

3.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Tropical rainforests are mostly located on the equator, where there is convectional rainfall. The concentrated energy from the sun warms the ground which in turn heats the air above it. The warm air rises, then cools and condenses into clouds causing rain. Rainforests then also generate their own*

rainfall where quick evaporation of water and transpiration adds more rising moist air to the atmosphere, which cools and condenses into clouds.

3.4 Decomposition

3.5 Runoff

3.6 The biomass is larger because there are more nutrient stored in the biomass than in the soil or the litter. This is because plants take up the nutrients quickly and nutrients in the soil can be lost through leaching.

3.7 If the trees were cut down, the soil would be more exposed to rainfall and would not have plants binding it together. This means nutrients would be washed out more quickly or soil may be washed away.

4.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Tropical rainforest ecosystems are characterised by a hot and humid climate all year round. Temperatures average in the mid 20°Cs and there is heavy convectional rainfall. The vegetation is lush with many different plant and animal species giving tropical rainforests more biodiversity than any other ecosystem. The soils do not contain many nutrients because most of the nutrients are stored in the biomass.*

4.2 E.g. leaf-tailed gecko

Accept other suitable answers.

4.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 5 shows how some plants have adapted to the tropical rainforests by developing drip tip leaves. The rainforest climate is very wet so water can sit on the leaves of plants and make them rot. Plants have adapted to this by using drip tips, which help water run off them quickly. Animals like the spider monkey have adapted by having prehensile tails. These tails allow them to grip onto branches and move through the trees. Most of the food in a rainforest is in the canopy layer so monkeys can access this with their prehensile tails. Other animals like the leaf-tailed gecko have adapted through camouflage. The leaf-tailed gecko is able to blend into the vegetation and stay safe from predators through its camouflage.*

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Chapter 9

All exemplar answers given are worth full marks.

1.1 B

1.2 **One of:** commercial farming, subsistence farming, logging, road building, mineral extraction, road building or settlement and population growth.

Similar statements to the following are also creditable: Because countries are trying to develop.

1.3 Commercial farming causes deforestation because large areas of trees are cleared in order to have land to rear cattle on to supply the beef and leather industries.

1.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Road building causes deforestation because trees are cut down to create space for roads. However, this only accounts for a small amount of deforestation. The biggest impact of road building is the way they open the rainforest up to other causes of deforestation. For example, subsistence farmers are only able to access the rainforest when roads are built. The roads therefore start the process of more widespread deforestation.*

1.5 993.9 million hectares

1.6 Brazil % decrease = (343.2 – 318.7) ÷ 343.2 × 100 = 7%

Indonesia % decrease = (93.8 – 84.4) ÷ 93.8 × 100 = 10%

Indonesia had the largest percentage decrease.

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *There are many reasons for deforestation in the Amazon rainforest. One of these is the building of hydroelectric dams, which involves clearing and flooding a large amount of rainforest. Another is mining for resources and minerals like coal and iron ore. While both are important factors in deforestation, in percentage terms they account for a relatively small amount of the loss of rainforest at less than 3%.*

The biggest cause of deforestation is commercial farming, when forest is cleared for cattle ranching or growing cash crops like soy. This is a significant cause because the rainforest soils quickly lose nutrients and more land needs to be cleared to continue agricultural practices.

However, it could be argued that road building the most significant cause because without roads activities like mining, commercial farming and subsistence farming would not take place. Road building starts all the other activities of deforestation and for this reason it is the most important cause of deforestation.

2.1 They reduce drought by creating local water cycles.

Accept other suitable answers.

2.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *At a local scale, rainforests are important to indigenous people because it is their home. Indigenous people have been living sustainably in the rainforests for thousands of years with rainforests providing them with the food, materials, and medicines they need to survive. At a global scale, rainforests are important in reducing global warming. Rainforests remove CO_2 from atmosphere, which is a greenhouse gas. Reducing quantities of greenhouse gases is important in mitigating climate change.*

2.3 Deforestation exposes soils to the actions of the rain and the wind. Vegetation binds soil together, so without this, heavy rain will wash soils and nutrients away. Wind will also erode the soils.

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Deforestation could change the climate by reducing the quantity of rainfall and even creating drought conditions. Before deforestation, transpiration from vegetation and evaporation of water sitting on leaves mean that rainforests release large quantities of water vapour during the day. As the water*

vapour rises, it condenses and falls as rain. If the trees are removed, the source of moisture is removed, which leads to much drier conditions.

2.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Deforestation contributes to global climate change because trees remove CO_2 from the atmosphere through the process of photosynthesis. They then store this CO_2. Cutting trees down therefore adds to the CO_2 in the atmosphere in two ways. Firstly, trees are no longer able to remove CO_2 from the atmosphere and secondly, the stored carbon in the trees is released back into the atmosphere.*

The Amazon rainforest absorbs 25% of global CO_2 and also stores 150 billion tonnes of carbon. CO_2 is a greenhouse gas that traps long wave radiation from the sun as it returns to space. By putting more CO_2 in the atmosphere, more radiation is trapped, contributing to climate change.

2.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I strongly disagree with the statement. For countries like Brazil, the benefits of using resources in the rainforest to develop are enormous. Activities like commercial logging and agriculture provide jobs and create wealth for the Brazilian economy. Activities like this in the Amazon contribute 8% of Brazil's GDP. This means that many people are lifted out of poverty and the government has money to invest in health and education.*

However, the environmental consequences of deforestation are devastating on a global scale. The rainforest's role in absorbing 25% of global CO_2 and mitigating global climate change means that deforestation will worsen sea level rise, coastal flooding, droughts, species extinction and all the other negative consequences of global warming. The economic costs of addressing these issues outweigh any economic benefits of exploiting the rainforest. For example, the cost of global reduced crop yields alone caused by Amazon deforestation is $3.6 trillion over the next 30 years.

While individual countries may benefit economically in the short term from deforestation, I disagree with the statement because the long term and global costs are worse.

Arguments agreeing with the statement should be credited if they are supported with appropriate evidence.

3.1 **One of:** selective logging; replanting; conservation; education; ecotourism; international tropical hardwood agreements; debt reduction.

3.2 International tropical hardwood agreements stop widespread deforestation by only allowing the sales of timber from sustainable forestry using selective logging.

3.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Selective logging helps manage the rainforest sustainably because only particular trees are removed. Before it was introduced, all trees and vegetation would be removed to access hardwood trees like mahogany, but selective logging targets the mahogany trees and removes them without disturbing the surrounding vegetation. Replanting involves sowing a variety of seeds in nurseries. When areas of the rainforest are cleared, the new trees grown in nurseries are replanted. This allows the forest to regenerate over a long period of time.*

3.4 Conservation means that economic opportunities of developing the rainforest are reduced. Educating people about methods such as sustainable farming does not carry any legal force and relies on goodwill to have an impact.

3.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One of the underlying reasons for deforestation is that some countries (such as Brazil and Malaysia) need to develop their economies to create wealth to develop and pay off their debts. Debt reduction involves cancelling debt in exchange for conservation. Cancelling the debt means that there is less*

economic need to use the rainforest to generate wealth, which can encourage sustainable rainforest management.

3.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Ecotourism has many benefits. It allows using the rainforest to generate wealth but in a way that does not damage the environment. The advert illustrates this because tourists can only arrive by boat, meaning there has been no large-scale road development. They also stay in accommodation that does not have electricity. This is sustainable because the environment is not being damaged.*

A disadvantage is that it is a small-scale strategy, meaning less money can be made. Although tourists often pay more money to avoid damaging the environment, the number of tourists is limited. However, because the environment is being preserved, it means ecotourism can continue in a sustainable way in the long term. In my opinion, the advantages of this strategy outweigh the disadvantages.

4.1 The very heavy rainfall means that nutrients are washed out of the soil through leaching.

Accept other suitable answers.

4.2 **Accept** 31.8°C or 32°C

4.3 224 mm

4.4 164 mm

Working:

Rainfall values in ascending order: 38, 46, 58, 84, 107, 142, 170, 203, 221, 231, 249, 262

Median: (142 + 170) ÷ 2 = 156

Median of lower half: (58 + 84) ÷ 2 = 71

Median of upper half: (221 + 231) ÷ 2 = 235

Inter-quartile range: 235 – 71 = 164 mm

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Chapter 10

All exemplar answers given are worth full marks.

1.1 A

1.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Hot deserts are found 30° north and south of the equator where the Hadley and Ferrel cells meet. Close to the equator, temperatures are hot because there is relatively high insolation and the sun's energy is concentrated. It is dry because there is sinking air creating an area of high pressure with few clouds. This creates a dry climate.*

1.3 Rainfall in Salah is low throughout the year. The highest rainfall is in **November** where there is **5** mm of rain. There is no rainfall between March and July and September and October. The maximum temperature is high throughout the year, reaching a peak of 41°C in **July / August**.

1.4 **Accept** June, July, or August

1.5 8°C

1.6 6°C

Working:

Temperature values in ascending order: 28, 28, 29, 30, 31, 32, 34, 35, 35, 36, 36, 36

Median: (32 + 34) ÷ 2 = 33

Median of top half: (35 + 36) ÷ 2 = 35.5

Median of bottom half: (29 + 30) ÷ 2 = 29.5

Inter-quartile range: 35.5 – 29.5 = 6°C

1.7 6.6 mm

1.8 79 mm

1.9 Deserts are cold at night because there are no clouds to trap any heat.

2.1 **Accept any of:** low biodiversity; very hot temperatures; low precipitation

2.2 Soils are dry with few nutrients.

2.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The soils gain their nutrients from decaying dead plants and animals. In turn, the soils provide nutrients for plants to grow, which then provide food for animals. Plants also help to bind the soil together and their leaves help keep moisture in the soil, which is needed for plant growth.*

2.4 Hot deserts have high atmospheric pressure and very dry climates. This leads to soils being dry with little vegetation and few animals. They therefore have low biodiversity.

2.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Biodiversity can be influenced by climatic factors like rainfall. Where there is little rainfall, there tends to be low biodiversity because plant life requires water to thrive. This is true in hot deserts where the high temperatures combine with low rainfall to leave these ecosystems with little variety of plant life. This tends to lead to few animals because there are few plants to support a lot of animal life.*

2.6 Camels have adapted to the sandy environment by having wide feet that do not sink into the sand.

Accept other suitable examples.

2.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Hot deserts provide a difficult environment for plants and animals. Temperatures are extremely hot, there is little rainfall, and soil quality is poor with little vegetation for animals to feed on. Some plants like cacti have adapted to this environment by storing water in their stems and having long root systems so that they can access water from a wide area. Their waxy skins also help to reduce the amount of moisture lost to transpiration. These adaptions allow them to thrive in low rainfall and hot environments.*

Animals like jerboas are nocturnal, so they avoid the heat of the day and are awake at night when it's cooler. Other animals like camels have adapted to the environment by having leathery mouths that allow them to eat spiky plants containing water. The hump of camels is a fat store, so that they can survive for long period of times without food or water. This is important because of the sparse hot desert environment where there are not many food and water sources. Finally, the wide feet of camels allow them to walk easily in the desert without sinking into the sand. This means they expend less energy when walking around the desert.

3.1 Tundra ecosystems have low lying vegetation like moss.

Accept other suitable answers.

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Plants in tropical rainforests face a challenge of accessing light. The vegetation is so dense in the rainforest that the forest floor is very dark. Plants are therefore in a constant battle for light and rely on adaptations to survive. They must also survive in an extremely wet environment. This means their leaves might rot if the regular rainwater is left sitting on them. Adaptations like drip tip leaves can help them survive in this environment.*

3.3 Subsistence agriculture is when local people use land to grow food for themselves and their families. It is causing rainforest deforestation because of the large numbers of farmers clearing land to grow crops. As the soils quickly lose their nutrients, farmers must clear more land. Subsistence agriculture accounts for about 25% of deforestation in the Amazon.

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Chapter 11

All exemplar answers given are worth full marks.

1.1 The low rainfall means that there is not enough water for people to live or for activities like agriculture that require a lot of water.

1.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Extreme temperatures provide a challenge for development because daily temperatures that reach up to 50°C are extremely difficult for people to work in. In temperatures like this, people need regular breaks and access to shade. The hot temperatures also make it difficult for machinery to operate without overheating, which can lead to regular breakdowns, preventing development.*

1.3 Hot deserts often have limited transport infrastructure with many areas only accessible by camel. This provides a challenge to development because equipment and machinery cannot be easily transported to where it is needed.

1.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *I think that extreme temperatures are a big challenge to development, but I do not think they are the biggest challenge. Extreme temperatures make it difficult for people to work for long hours outside and difficult for machinery to operate. This hinders economic development but is not an insurmountable problem because specialist machinery can be used and people can take regular breaks and protect themselves from the extreme heat.*

A bigger challenge is a lack of water supply. Large quantities of water are needed for large-scale human settlements and for any kind of industrial development. Hot deserts typically have less than 250 mm of rainfall a year and have few stores of water. This means that large-scale development is only possible with water transfer schemes. Without water, it is not possible to have development so this makes the low rainfall and water supply issues a bigger challenge than extreme temperatures.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Energy production provides an opportunity for development because hot deserts receive large amounts of sunlight. This means they are ideal environments for developing solar farms. The captured solar energy can be used for industrial and domestic use. Hot deserts also offer opportunities for wind energy because the lack of urban development means there is space for wind farms. India's largest wind farm is in a hot desert environment at Jaisalmer.*

1.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Despite having the challenge of water supply, hot deserts can be developed through farming. Water transfer schemes bring water into hot deserts, where there is plenty of space for farming. In India, the Indira Gandhi canal supplies 3500km^2 of desert with water. This means many crops like wheat and cotton can be grown in the desert.*

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms

Marks	Description
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I partially agree with this statement. The images in Figure 1 show that there are opportunities for economic development in hot deserts. They provide good places for wind farm development, for example. The large spaces allow wind farms to be built and India's largest wind farm at Jaisalmer is one example of successful development. The energy created can then be used in other domestic and industrial developments.*

Tourism is also an opportunity for development. The unique environment in hot deserts attracts tourists wanting to experience things like camel rides and the large open and undeveloped spaces.

However, there are many challenges to successful economic development. The extreme temperatures limit the amount of time people can spend outside and problems with water supply mean that water transfer schemes are needed or that development can only take place near the limited number of water sources. These challenges mean that developments like energy production, tourism, or even agriculture will be more limited than in other places that do not have these challenges. So while there are some opportunities for development, I disagree that there are many opportunities. There are too many challenges for widespread economic development in hot deserts.

2.1 Desertification is the gradual change of fertile land into desert.

2.2 Areas at risk from desertification are next to existing desert and semi desert areas. South of the equator, they are mostly found between the equator and 30°S in Africa, the coastal regions of Australia and a band stretching across central South America. North of the equator, there is a band across central Africa and in the northern Middle East and central and southern Asia.

2.3 Over-farming of the land meaning that nutrients are lost from the soils turning it to dust.

Accept other suitable answers.

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Areas on the fringes of hot deserts are often overpopulated. This means that demand for fuel wood is high and trees and other vegetation is removed at a faster rate than it is regrown. Trees help to bind the soil together and protect it from the wind and rain, so when trees are removed, the soil is more likely to erode. People also overgraze these areas. Animals eat vegetation that protected the soil. Their hooves cause erosion, turning the soil to dust and increasing desertification.*

2.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Population growth is a significant cause of desertification. When the population living on the fringes of hot deserts grows, over-cultivation and overgrazing are more likely because there is a bigger population to support. Over-cultivation causes desertification because the land is farmed so much that the soils lose nutrients and begin to turn to dust. Furthermore, overgrazing will take place. When animals like goats eat the vegetation, soils are exposed to wind and rain erosion. Erosion caused by animal hooves helps turn soils to dust and further desertification.*

People also cut down natural vegetation to use for fuel wood. This also exposes the soils to wind and rain erosion. Population growth means these activities are more likely to take place, causing desertification on the fringes of hot deserts.

2.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Physical factors cause desertification on the fringes of hot deserts by the actions of the wind and rain on the soil.*

However, physical erosion is mostly a problem because of human factors that expose the soil to erosion. For example, overgrazing exposes the soil to wind and rain erosion because animals eat the vegetation protecting the soil and binding it together. Similarly, population growth leading to cutting down vegetation for fuel wood also removes protective vegetation from the land and makes the soil more likely to be exposed to the weather.

So while the physical factors of wind and rain are mostly responsible for turning the land into desert, it is the removal of vegetation by overgrazing and gathering fuel wood that is exposing the soil in the first place. This means that human factors and not physical factors are the main cause of desertification.

Arguments agreeing with the statement should be credited if they are supported with appropriate evidence.

3.1 Laying lines of stones along slope contours means that soil will not be washed away when it rains because it will be trapped by the stone lines. This means that the soil will remain intact and reduce the risk of desertification.

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Planting drought resistant trees like Acacia trees can reduce the risk of desertification because the trees' roots help to bind the soil together and shelter it from the effects of wind and rain. If exposed to wind and rain, the soil is more likely be blown and washed away, gradually turning into dust. Trees also provide shade, which keeps moisture in the soil. This means that other vegetation can grow, further binding the soil together and protecting it from erosion.*

3.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Desertification is the gradual change of the land into desert. It is caused by soil becoming more exposed to wind and rain erosion, often through human activity like overgrazing and the removal of trees for fuel wood. Figure 2 shows two different strategies to manage desertification, which tackle different causes.*

Planting trees is important because the trees can help to bind the soil together and shelter it from the effects of wind and rain. They also provide shade, which keeps moisture in the soil and helps new vegetation to grow. However, trees take a long time to grow, and the soil must be kept in place while this is happening. The stone lines shown in Figure 2 help to do this by preventing soil from being washed away by the rain. Both strategies therefore work together to manage desertification.

Technology like solar ovens can also be used to reduce the need for firewood. This means that as vegetation is restored through tree planting it is less likely to be removed because people can cook in solar ovens rather than traditional wood-burning stoves. These three different strategies support each other because planting trees is only going to be effective if the demand for firewood is reduced.

4.1 Emergents

4.2 The forest floor is a very dark and wet environment with thick vegetation.

4.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Tropical rainforests have high biodiversity because the climate is hot and wet all the year round. It is hot because tropical rainforests are close to the equator where there is low solar insolation. It is wet because the heat from the Sun creates convectional rainfall when warm air rises, cools, and condenses to give heavy rain showers every day. These hot and wet conditions are the ideal environment for plant growth which is then able to support a huge variety of insects and animals.*

5.1 Hot deserts are found in bands east to west across the world mostly either side of the tropics. 30°N of the equator, there are desert areas in south-west USA, the Sahara Desert in Africa, and the Thar desert in southern Asia. Around 30°S, there are deserts in Australia, Southern Africa and the west coast of South America.

Oxford Revise | Geography | Answers

Chapter 12

All exemplar answers given are worth full marks.

1.1 Tundra environments are found in a band stretching east to west at high latitudes in northern Europe, Russia, Canada, and Alaska. At low latitudes, they are found in southern South America and along the coasts of the Antarctic ice sheet.

1.2 A and E

1.3 Precipitation in Fairbanks is quite low throughout the year. The highest precipitation is in **August**, when there is **50** mm of precipitation. The temperature varies considerably with a low of -25°C in December and a high of 16°C in **July**.

1.4 July

1.5 16°C

1.6 10°C

Working:

Temperature values in ascending order: –9, –7, –7, –6, –5, –3, –1, –1, 3, 4, 6, 7

Median: (–3 + –1) ÷ 2 = –2

Median of bottom half: (–7 + –6) ÷2 = –6.5

Median of upper half: (3 + 4) ÷ 2 = 3.5

Inter-quartile range: –6.5 – 3.5 = –10°C

1.7 28.1 mm or 28 mm

1.8 337 mm

1.9 Polar environments have low precipitation because there is high atmospheric pressure due to sinking air. Sinking air means there are few clouds, resulting in low precipitation.

2.1 Tundra environments are cold with winter temperatures falling to as low as –20°C.

Accept other suitable answers.

2.2 Soils in tundra environments are permanently frozen (permafrost). In summer months, the top layer thaws, meaning they are often waterlogged. The soils are acidic and not very fertile.

2.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Soils in the tundra have few nutrients, so plant life is limited and not very diverse because plants depend on the nutrients in the soil. The animal diversity is also low because the limited vegetation means there are limited food sources for herbivores. Similarly, the number and variety of carnivores is low because they depend on the limited diversity of herbivores. However, each element depends on each other. The animals feed off the plants and when they die, they return nutrients to the soil, which helps support plant growth. When plants die, they also return nutrients to the soil that allows new plant growth, providing food for animals.*

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Polar environments are very cold with low amounts of precipitation. Winter temperatures can be as low as –50°C. The ground is permanently frozen and covered in ice with no exposed soil, so there is very little plant life except for the lichens and mosses that grow on rocks. The very cold temperatures and very limited plant growth means that there are few animals that can survive in this environment. Polar bears and penguins live on the fringes of the ice.*

2.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *In cold environments like polar and tundra, temperatures are too cold and precipitation too low to give good conditions for plant growth. In polar environments, the soil is permanently covered in ice so plants like moss can only grow on exposed rock. In tundra environments, soils have few nutrients so only a small range of plants are able to survive. So, precipitation and temperature are two factors leading to low biodiversity in cold environments. When there are few plants, this creates a further factor leading to low biodiversity because there is limited food for insects and animals.*

2.6 Polar bears have adapted to cold environments by having thick fur. This means they are able to stay warm in extreme temperatures that can get as low as –50°C.

2.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Cold environments provide challenges to plants and animals due to their very cold temperatures, winds, and low precipitation. Animals like Arctic foxes have adapted to this environment by having thick fur to keep warm and black noses that help to absorb heat. These adaptations are also found in polar bears that are further adapted to the cold temperatures by having a thick layer of insulating fat.*

Biodiversity is low in cold environments, which means that animals have to travel long distances in search of food. Polar bears have adapted to this by having wide paws that mean they do not sink into the snow and their white coats are similar to Arctic foxes and provide camouflage from predators.

Plants like the bearberry plant have adapted by being very low growing which protects them against the strong winds. Their hairy stems retain heat while the leathery leaves help to keep moisture, which is scarce in this cold and dry environment. Other plants have adapted to the cold by being able to flower very quickly to take advantage of the short growing seasons. Overall, plants and animals have adapted in a variety of ways to the challenge posed by the very cold temperatures and low precipitation.

3.1 Rainforest ecosystems have high average temperatures and high rainfall.

Accept other suitable answers.

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Plants in tropical rainforests face a challenge of accessing light. The vegetation is so dense in the rainforest that the forest floor is very dark. Plants are therefore in a constant battle for light and rely on adaptations to survive. They must also survive in an extremely wet environment. This means their leaves might rot if the regular rainwater is left sitting on them. Adaptations like drip tip leaves can help them survive in this environment.*

3.3 Subsistence agriculture is when local people use land to grow food for themselves and their families. It is causing rainforest deforestation because of the large numbers of farmers clearing land to grow crops. As the soils quickly lose their nutrients, farmers must clear more land. Subsistence agriculture accounts for about 25% of deforestation in the Amazon.

Oxford Revise | Geography | Answers

Chapter 13

All exemplar answers given are worth full marks.

1.1 One challenge are the extremely cold temperatures that can be as low as –30°C. This makes it difficult for machinery to operate and for people to work outside.

Accept other suitable answers.

1.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Extreme temperatures in cold environments can reach as low as –30˚C. This provides a challenge because it is too cold for people to work outside without protective clothing, but such clothing makes it more difficult to move around and work. Machinery might not work properly in the cold, making it difficult to develop. Cold environments are also inaccessible with little transport infrastructure. This makes it much more difficult to develop because the difficulty in transporting machinery, people, and supplies is a barrier to construction and industry.*

1.3 It is difficult because of the permafrost. Buildings need to be built on stilts so that the heat they give off does not melt the ground around them, which would make them unstable. Transport infrastructure like roads also have to be on gravel so that the ground does not thaw underneath the road.

1.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *I strongly agree with this statement because many of the difficulties of developing cold environments are linked to the extremely cold temperatures.*

In Svalbard temperatures can reach as low as –30°C, meaning that people cannot work outside and machinery might not function properly. This causes problems for development because it means there are seasons during which development like building essential infrastructure cannot take place. This means the pace of development is slower than in more temperate climates.

Challenges like inaccessibility might be considered very important because the location and poor infrastructure of many cold environments means it is difficult to transport machinery and other equipment. However, even if these places were made more accessible, the cold temperatures and challenges of building on permafrost would still hinder development. Therefore, the extreme temperatures are the biggest challenge that is faced.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Many cold environments like Svalbard have 24 hours a day of sunlight in the summer months. This provides an opportunity for development because solar energy can be produced, which can create economic wealth when it is sold. Svalbard can also produce energy from geothermal sources. This is a very clean and reliable energy source that can used for economic development.*

1.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Fishing provides an opportunity for economic development because in some cold environments the sea is stocked with fish off the coast. This means that trawlers are able to gather fish to sell, generating wealth and leading to economic growth and development. Off the coast of Svalbard, for example, there are large amounts of cod and herring that can be fished. People employed in the fishing industry will also earn money that will be spent in the local economy. This benefits local shops, restaurants and other businesses and creates a multiplier effect.*

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I slightly disagree with the statement. This is because I think cold environments provide some opportunities for successful economic development, but I think these opportunities are quite limited.*

Figure 1 shows adventure tourism, which has been a big growth area for economic development in cold environments. Tourists are attracted by the unique environment and opportunities to participate in unique activities like snow mobile safaris. In Svalbard, tourism is now the biggest employer and there were 120 000 visitors in 2018, which suggests successful economic development. However, I think that the market is limited and concerns over damage to the fragile ecosystems means that tourism cannot expand indefinitely. If too many tourists arrive, then the attraction of being in the wilderness will be destroyed.

Coal mining might also provide an opportunity but similarly, environmental concerns will limit this in the future. The world is moving away from coal production so in the long run this is not a feasible strategy. Other possibilities for economic development include solar energy production and fishing. These are viable economic strategies but the barriers to economic development like the extreme weather, isolation, and difficulties building infrastructure in the permafrost will all prevent large scale economic development.

To conclude, there are some opportunities for economic development in cold environments but there are not many opportunities.

Arguments agreeing with the statement should be credited if they are supported with appropriate examples.

2.1 Wilderness areas are places that are remote and untouched by human activity.

2.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Cold environments are ecosystems with very difficult conditions for plants to grow in. Plants have to adapt to the very cold weather and low rainfall. When these ecosystems are damaged, it is difficult for them to re-establish because of the challenges they face. In addition the growing seasons are very short. This means that even when plant growth returns, it takes a very long time for damaged ecosystems to fully recover.*

2.3 Permafrost is a big methane store. Methane is a greenhouse gas when released to the atmosphere traps radiation returning to space and quickens global warming. When permafrost melts it releases its stored methane and therefore quickens climate change.

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Economic development might harm cold environments through the building of infrastructure needed for development. The equipment, vehicles, and machinery needed to build things like roads and coal mines will all damage the fragile ecosystem as they are transported and used. Secondly, specific activities like off-road driving will damage the ecosystem because the vehicles drive across unprotected landscapes. Both of these developments are especially damaging because cold environments take a long time to recover from any damage due to the short growing seasons.*

2.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *I partially agree with the statement because opportunities for economic development are quite limited in cold environments, and the ecosystem they damage is more valuable than the economic benefits of developing it.*

For example, cold environments might be developed through tourism. In Svalbard this is the biggest employer and in 2018 130 000 visitors arrived. However, due to the inaccessible and hostile nature of the environment, tourism will never create large amounts of wealth. Furthermore, even small numbers of tourists can be immensely damaging because cold environments are extremely fragile. It can take years for ecosystems to recover from damage from tourists walking off road or the damage caused by building tourist facilities. Because cold environments contain many unique plant and animal species and are important areas of wilderness for scientific study they are, therefore, more valuable left intact.

3.1 Conservation groups like Greenpeace can reduce damage through campaigning successfully against economic development like oil exploration or whaling.

Accept other suitable answers.

3.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Governments can establish nature reserves and protected areas. This means that economic development is concentrated in certain areas and other areas are not damaged, creating a balance between conservation and development. For example, the Arctic National Wildlife Refuge in Alaska (USA) was established in 1960 and protects 19 million acres.*

Governments can also sign international agreements like the Antarctic Treaty. This means that efforts at conservation are coordinated internationally which prevents unregulated fossil fuel exploration and promotes the idea that cold environments are valuable to everyone. This means a consensus is built around long-term conservation and the short-term needs of economic development.

3.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *In Alaska, the needs of economic development relate to the oil industry and the drilling and transport of oil in this fragile cold environment. Oil is a valuable resource and is important to economic*

development because of the wealth that is earned from selling it. Technology allows a balance between development and conservation through the building of the Trans-Alaska pipeline to transport the oil. The pipeline is built above ground level so that the permafrost does not melt and the caribou can travel beneath it when migrating, thus limiting the environmental damage caused by transporting oil.

3.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Figure 2 shows two different strategies balancing the needs of economic development with conservation. The first involves indigenous groups who have lived alongside their environment in a*

sustainable manner for centuries. Listening to the needs of indigenous groups is important if the benefits of economic development like employment and social improvements are to be balanced with conservation.

However, indigenous groups are just one opinion in organisations like the Arctic Council. Groups like Greenpeace (also shown in Figure 2) are also important in putting pressure on all groups involved in Arctic development to think about conservation. This shows that a variety of strategies are needed to balance economic development with conservation. In addition, when economic development takes place, technology can be used to reduce the environmental impact of this. For example, the Trans-Alaska pipeline allows oil to be transported without large numbers of vehicles. It is also built above ground so that the permafrost does not melt and caribou can travel beneath it when migrating.

A range of strategies working together can control economic development and also ensure that conservation is considered when it does take place.

4.1 Emergents

4.2 The forest floor is a very dark and wet environment with thick vegetation.

4.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Tropical rainforests have high biodiversity because the climate is hot and wet all the year round. It is hot because tropical rainforests are close to the equator where there is low solar insolation. It is wet because the heat from the Sun creates convectional rainfall when warm air rises, cools, and condenses to give heavy rain showers every day. These hot and wet conditions are the ideal environment for plant growth which is then able to support a huge variety of insects and animals.*

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Chapter 14

All exemplar answers given are worth full marks.

1.1 A

1.2 Upland areas are found in Scotland, Northern England, Wales and the southwest of England. They are generally north of the Tees-Exe line, which is a line drawn from the mouth of the River Tees to the mouth of the River Exe.

1.3 D

1.4 D

Oxford Revise | Geography | Answers

Chapter 15

All exemplar answers given are worth full marks.

1.1 Destructive waves have a weak swash and constructive waves have a strong swash. Destructive waves erode material and constructive waves deposit material.

1.2 There are two types of waves found at the coast. **Destructive** waves have a strong **backwash**, which removes material from the beach. **Constructive** waves build up the beach due to large amounts of sediment they carry and their powerful swash.

1.3 Fetch is the distance over which the wind has blown.

1.4 Constructive

1.5 The breaking down of rocks without a change in their chemical composition through the actions of temperature or rain.

1.6 When rocks are broken down with changes in their chemical composition. For example, when acidic rainwater containing CO_2 dissolves limestone.

1.7 D

1.8 Sliding occurs when weaknesses occur in a rock face along joints or fault lines. When weathering attacks a fault line, large blocks slide downhill along a bedding plane.

1.9 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 1 shows mass movement has taken place through a process of rotational slip. The clay coastline has been eroded at its base through hydraulic power, abrasion, and solution. This has weakened the base and made the cliff unstable. At the same time, the soil has become saturated and very heavy. Rainwater would also have penetrated the cliff in small cracks and crevices. This has lubricated the crack and made it slippery. With an unstable base, heavy top, and lubricated cracks, the cliff has given way under gravity and slipped in a process of mass movement.*

2.1 Erosion is the wearing away and removal of rocks by the action of the sea.

2.2 Geology affects the rate of erosion because some rocks are more resistant to erosion than others. For example, chalk is more resistant to erosion than clay, so it erodes more slowly.

2.3 Hydraulic power is the sheer force of the waves hitting a cliff. The wave also compresses air into cracks in the cliff, forcing it apart.

2.4 Abrasion is the waves throwing sand, rocks and pebbles at the cliff and wearing the cliff face away.

2.5 Attrition is when rocks within the water knock into each other and become smaller and rounder.

2.6 C

2.7 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Longshore drift is the transportation of sediment along the coastline. Waves approach the coast in the direction of the prevailing wind and the swash pushes sediment up the beach. Under the influence of gravity, the backwash pulls the sediment straight back down the beach. The next wave pushes the sediment back up the beach in the direction of the prevailing wind. This process is repeated, and sediment is gradually moved along the coastline in a zig zag pattern.*

2.8 Deposition occurs when the sea drops the material that it is carrying.

2.9 The sea deposits material when it loses energy such as when friction increases in shallow areas.

Accept other suitable answers.

2.10 Deposition is common in sheltered coastlines, such as in a bay behind a headland. Waves have lost energy through striking the headland and the bay is also sheltered from the wind.

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Chapter 16

All exemplar answers given are worth full marks.

1.1 A

1.2 A

1.3 Headland

1.4 It is a more resistant rock to the two rock types to the north (Swanage Bay) and the South (Durlston Bay).

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Swanage Bay might have been formed because it is composed of a less resistant rock than the rock to the north and south. This means that when destructive waves hit this stretch of coastline, Swanage Bay has been eroded at a faster rate through hydraulic action and abrasion than the rocks nearby. Over time, this has led to Peveril Point and Ballard Point protruding out to sea as headlands, while Swanage Bay is eroded to form the bay.*

1.6 C

1.7 C

1.8 Northeast

1.9 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 2 shows an arch and a stack in a headland that has become disconnected from the mainland. At one point in time, the headland would have had a crack in it. Erosional processes like hydraulic action and abrasion attacked this crack, widening and deepening it into a cave. Continued erosion would eventually have cut through this cave to create an arch like the one seen in the middle of Figure 2. Over time, more erosion at the base of the arch and weathering processes at the roof of the arch, along with gravity would cause the arch to collapse, leaving the stack that can be seen in the middle-right of Figure 2. The stack on the far right of Figure 2 would also have once been connected to the mainland with an arch and would have become disconnected in a similar way.*

1.10 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Geology has been very important in the formation of landforms on the Swanage coastline. The town of Swanage is located in a bay. This has been formed because it is a discordant coastline where there are bands of different rocks perpendicular to the coast, which erode at different rates. To the north of Swanage Bay there is a band of chalk and south of Swanage Bay is a band of limestone. In between is a band of clay, which is much less resistant to erosion than chalk or limestone. The clay has been eroded more quickly, creating the bay and leaving two headlands to the north and south. These coastal landforms only form because of the geology of the area and bands of resistant and less resistant rock.*

The Swanage coastline also has Old Harry Rocks, a series of caves, arches, and stacks in the headland north of Swanage Bay. The geology is also important here because chalk is quite resistant to erosion meaning that it is possible for these erosional landforms to form. If the geology was clay, for example, the cliffs would collapse through mass movement and the rocks would not be stable enough for arches and stacks to form.

2.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Wave-cut platforms are formed on coastlines with quite resistant rock like chalk or limestone. Erosional process, such as hydraulic action and abrasion, attack fault lines and weaknesses in the rock, which creates a notch in the cliff face. Over time, this notch deepens as it is eroded further back. The cliff face above the notch becomes unstable and eventually collapses. The whole cliff moves backwards and as the process is repeated, a wave-cut platform is formed at the low water mark and is visible at low tide.*

2.2 A: Arch

B: Stack **(accept stump)**

C: Cave

2.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Over time, it is likely that the arch will collapse, leaving a stack. This is because the roof of the arch will be weakened by weathering processes like freeze-thaw weathering and biological weathering. As it is weakened, gravity will cause the arch to collapse. The stack will be eroded at its base by hydraulic power and abrasion. This will create a wave cut notch at the base of the stack which will gradually deepen and undercut the stack, leading to it collapsing to form a stump.*

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

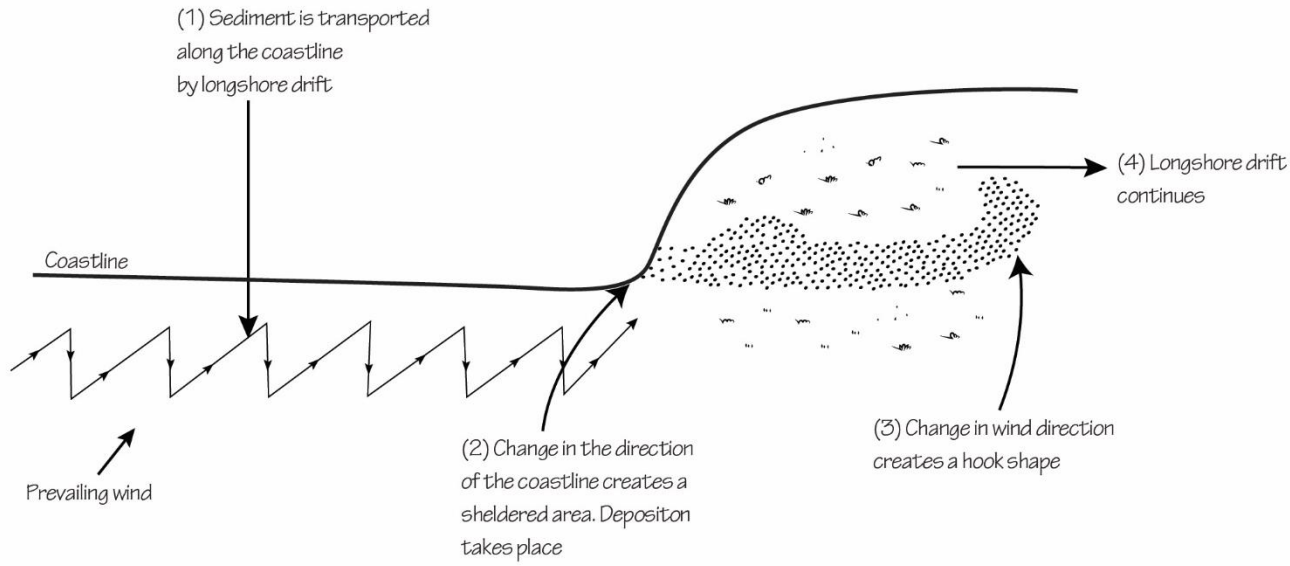
Example answer: *Beaches are formed in sheltered environments where wave energy is lower. In a bay, for example, the water is sheltered by the two headlands, providing the conditions for beach formation. Waves*

lose energy by striking the headland and travel into the bay as constructive waves. These waves have a strong swash and a weak backwash, meaning they deposit material, eventually forming a beach.

2.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *A spit is formed when longshore drift moves sediment along the coast in the direction of the prevailing wind. When there is a change in direction of the coastline, it is more sheltered, causing deposition to take place. Sediment continues to be deposited along the coastline and the spit starts to extend out to sea. When the wind changes direction, this causes a hook shape in the spit which then continues to extend out to sea when the wind returns to its normal direction.*



To receive full marks, students must use one or more diagrams in their answer.

2.6 Sand dunes require onshore winds blowing sand toward the shore. They also require a small obstacle so that sand can accumulate and provide conditions for plants to establish themselves.

2.7 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Sand dunes are formed when onshore winds blow sand toward the land. Some sand becomes trapped by small obstacles like driftwood and an embryo dune starts to develop. Over time, vegetation like sea lyme grass starts to grow and holds the dune together, allowing more sand to accumulate. The dunes grow in size with more vegetation like marram grass growing as the dunes develop into fore dunes and then yellow dunes. As vegetation in the dune dies, it adds fertile nutrients to the sand so over time a wider range of vegetation grows, leading to the formation of grey dunes.*

2.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Erosion and deposition have worked together to form landforms on the Swanage coastline. Swanage Bay has been formed through processes of hydraulic power and abrasion as the waves have eroded the soft clay which lies between a band of chalk to the north and limestone to the south. This has created a sheltered bay with the conditions for a beach to form. Constructive waves have deposited sand in the bay sheltered between the headlands.*

Erosion has also led to the formation of caves, arches, and stacks in the chalk headland. Hydraulic power has widened a crack in the headland to form a cave which over time has enlarged and cut through the headland forming an arch. The arch is widened through further erosion and has collapsed leaving a stack called 'Old Harry'.

To the north and sheltered by the headland is Studland Bay, which is a spit and has developed through longshore drift transporting sediment and depositing it in the sheltered area behind the headland. The spit extends across Poole Harbour and sand dunes have also formed in Studland Bay. Overall, erosion has been responsible for creating bays, headlands, and stacks but deposition has taken place in the sheltered environments created by erosion leaving beaches and a spit.

3.1 The strength of the wind and the fetch (the distance the wind has blown over) both influence the strength of a wave.

3.2 D

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Chapter 17

All exemplar answers given are worth full marks.

1.1 Hard engineering is when structures are built to prevent erosion taking place.

1.2 Soft engineering is when strategies are put in place to reduce erosion by working alongside natural processes.

1.3 Managed retreat is when land is allowed to flood and human activity is moved away from the coastline.

1.4 Hard engineering strategies involve trying to stop natural processes taking place by building physical structures like sea walls, whereas soft engineering does not try to prevent these processes but works alongside nature.

1.5 Rock armour protects the coastline by placing a physical barrier in front of the coastline. The sea then strikes the rock armour instead of the cliff behind.

1.6 Gabions protect the coast by creating a barrier between the coastline and the sea. The gabions absorb the sea's energy rather than the coastline.

1.7 Groynes help build up a beach by trapping material transported by the longshore drift. The beach then absorbs the sea's energy rather than the land behind it.

1.8 The ongoing maintenance costs are a cost of protecting the coast with sea walls. They weaken over time and need expensive repairs on a regular basis.

1.9 Rock armour makes it more difficult to access the beach. They are large boulders placed along the coastline and are dangerous and difficult for people to walk over, which can prevent beach access.

1.10 Gabions have to be replaced or repaired every 5–10 years. This is because they have a relatively short lifespan, with the wire cages going rusty.

1.11 Groynes increase erosion further along the coastline. This is because they reduce longshore drift and starve places of material that would build protective beaches.

1.12 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary

Level	Marks	Description
	0	No relevant content

Example answer: *The coastline is protected by a recurved sea wall and rock armour. These both protect the coastline from erosion by creating a barrier between the sea and the cliff face. The sea hits the rock armour, and its energy is absorbed by the large boulders rather than cliff face, which prevents erosion from taking place. The recurved sea wall absorbs the energy of the waves but also reflects the energy back out to sea where it slows the next wave approaching. This means that the coastline does not receive the waves' energy and is therefore protected from erosion.*

1.13 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Sea defences are normally built if the cost of protecting the coastline is lower than the economic value of the land being protected. This generally means large urban areas receive coastal protection while low value farmland is rarely protected. The defences in Figure 1 are sea walls and rock armour. These are among the most expensive forms of coastal protection, so the land would have to be of very high economic value for the benefits to outweigh the costs. From the picture, there does not appear to be industrial or urban land being protected, so it is unlikely that the benefits do outweigh the costs given the high cost of building sea walls and rock armour.*

However, it is possible that important infrastructure like a power station is being protected, in which case the benefits would outweigh the costs because the cost of moving the power station would be higher than the cost of the sea defences.

2.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One reason would be the direct economic benefit of protecting the coast compared to the cost of the defences. Figure 2 shows an area with houses and people living there. The cost of moving and rebuilding the houses might be higher than the cost of the defences. A second reason might be indirect economic benefits. For example, an area defended might have a large tourist economy that provides lots of employment.*

2.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Areas are chosen to receive coastal defences by comparing the benefits of protecting an area with the cost of coastal defences. The area shown in Figure 2 has a lot of expensive houses and other economic activity. This suggests that there are strong benefits to protecting this area that are more than the costs of building sea walls. Figure 3 shows a caravan park. The cost of defending this stretch of coastline will be high compared to the value of the land being protected. Lyme Regis is an example of a town that received coastal defences costing £43m including sea walls, rock armour, and cliff stabilisation. However,*

Lyme Regis is a town with many people living there and a tourist economy that is worth £800m to the Dorset economy. This meant that is worth spending £43m to protect this town from coastal erosion because of the vital role it plays in the wider economy.

2.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Hard engineering strategies can cause conflicts because they often increase erosion on other land. For example, building groynes reduces longshore drift, which means that places further along the coastline have less material for protective beaches increasing erosion in these places. Hard engineering like sea walls or rock armour also looks unnatural and makes access to the beach difficult. This would cause conflict with people who prefer the area to maintain its natural appearance.*

2.4 These strategies protect the coastline by building a protective beach in front of the coastline. This means that the wave energy is absorbed by the beach rather than the cliff face.

2.5 Managed retreat protects the coastline by moving economic activity away from the coast. The land is then allowed to flood and a natural equilibrium is reached. Managed retreat does not disrupt natural coastlines further along the coast, so processes like longshore drift continue to build protective beaches.

2.6 Beach nourishment is not permanent and needs to be repeated on a regular basis because longshore drift will eventually remove material added to the beach.

2.7 Sand dune regeneration takes a long time to stabilise and build the dunes. This means that land is not fully protected until the dunes are regenerated.

2.8 Managed retreat does not stop land being eroded. This means that people who live on the land allowed to flood will lose their houses.

3.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 4 shows two soft engineering strategies: beach nourishment and sand dune regeneration. These both protect the coast in similar ways. Beach nourishment builds a protective beach in front the coastline. This both slows the waves approaching the coast and absorb the wave energy which reduces erosion of the land behind the beach. Sand dune regeneration builds protective dunes in front of land. These dunes will prevent the sea encroaching inland and protect the land behind the dunes from erosion.*

3.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The benefits of protecting the coastline are that coastal erosion is reduced and property and land is protected from the sea. For example, the beach that is being nourished in Figure 4 will absorb the sea's energy and protect the houses and infrastructure on the coast behind the beach. Likewise, the sand dunes might be protecting agricultural land or land used for recreation like golf courses.*

The costs of this include the economic cost of using the defences. Beach nourishment will cost a lot of money and cause disruption while it is taking place. The costs will also include ongoing costs. The sea will continue to remove beach material, so the beach will eventually need more sand added to it in the future. This is less likely with sand dunes because grasses once established will hold the dune together; however, it is likely that people will be restricted from accessing the dunes while the vegetation becomes established.

3.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One benefit is that managed retreat does not have ongoing costs. Once the initial cost of relocating economic activity is paid for, there are not any ongoing costs because the land is allowed to flood and there is not any valuable infrastructure or activity on this land. A second benefit is that natural processes are not interrupted. This means that places further along the coastline do not suffer from increased erosion, which might have been the case if the transportation of material along the coast had been reduced after using hard engineering strategies.*

3.4 People who own property or land which will be allowed to flood might not be in favour of managed retreat because they would suffer economically and emotionally from this strategy.

3.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Lyme Regis is a small coastal town in Dorset that is popular with tourists. The town had lost several properties to coastal erosion as the existing defences were inadequate and had been breached*

many times. Despite being a small town, Lyme Regis is worth £800m to the Dorset tourist economy, making it an important place to defend from coastal erosion.

To solve the problems of coastal erosion, the cliffs were drained, stabilised, and nailed together. This removed the danger of cliff collapse and protected many properties on the cliffs. A new sea wall and promenade was built along the sea front. The sea wall protects the town from erosion by absorbing the power of the waves and combining this with a promenade created a recreational space and gave a boost to businesses located in the town.

Answers will vary based on the coastal management scheme studied.

3.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Coastal management at Lyme Regis included beach feeding to maintain a wide sandy beach. This was good because it has reduced erosion but also kept a beach for visitors to enjoy. Also, the new beaches increased visitor numbers, which benefitted seafront business in the town. A second benefit was the rock armour protecting the harbour. This made it easier and safer for fishermen to use the harbour, especially when wave energy was high.*

Answers will vary based on the coastal management scheme studied.

3.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Coastal management schemes often cause conflict because different stakeholders might be impacted in different ways by the scheme. At Lyme Regis in Dorset, the coastal management scheme included cliff stabilisation, a new sea wall and promenade, and beach feeding to maintain a wide sandy beach to be used by tourists.*

Some stakeholders benefitted from these strategies. The promenade and wide beach protected the town form erosion but also brought more tourists into the town. This was beneficial to local business but conflicted with the interests of residents, who did not like the increased traffic congestion and problems with parking. The cliff stabilisation benefited people with property on the cliff but prevented fossils from being revealed, which conflicted with the interests of people who look for and study fossils.

Answers will vary based on the coastal management scheme studied.

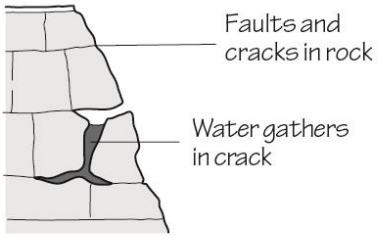
4.1 This question is level-marked:

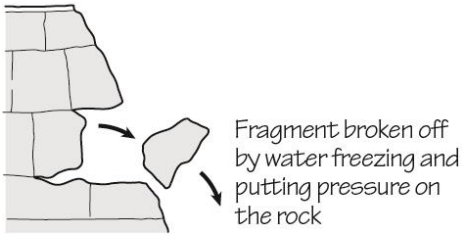
Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Freeze-thaw weathering takes place when water gets into a crack in the rock. When the temperature drops and the water freezes, it expands, putting pressure on the rock. Over many cycles of freezing and thawing, eventually fragments of rock break away.*

To receive full marks, students must use a diagram in their answer.





4.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *A bar is a sand or shingle beach that extends across a bay. It is formed through the process of longshore drift transporting sand along a coastline. When the coastline suddenly changes direction, deposition takes place in the sheltered water. Over time, the deposited material builds up into a small beach. Longshore drift then continues to transport sand across the mouth of the bay with deposition also continuing to take place. Eventually a bar is formed, stretching across the mouth of the bay.*

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Chapter 18

All exemplar answers given are worth full marks.

1.1 The gradient gets flatter towards the mouth.

1.2 The bedload will get smaller in size and rounder and smoother in shape towards the lower course.

1.3 Abrasion is one fluvial process which erodes the landscape. Abrasion takes place when the river throws stones and sediment against the river's banks, gradually wearing them away.

Accept other suitable answers.

1.4 Hydraulic action is the force of the water hitting the river banks. Faster flowing water has more hydraulic power.

1.5 Solution is when lightly acidic river water dissolves alkaline rocks like limestone.

1.6 Abrasion is when the river throws stones and sediment against the river's banks, gradually wearing them away.

1.7 Sea walls are usually made of concrete, so can look unnatural. They can also be expensive to build.

1.8 A

1.9 When the flow of water slows down and loses energy to transport its load, such as when it meets an obstacle.

1.10 **Accept either** V-shaped valley or interlocking spurs.

2.1 B

2.2 The land in this square is flat in the south-eastern corner and there is a slope rising from 10 m above sea level to 30 m above sea level running diagonally from the south to the north-east of this square. At the top of this slope, the land is flat. The highest point in the square is 33 m above sea level.

2.3 A meander

2.4 A spot height of 35 m above sea level.

2.5 22 m

3.1 Interlocking spurs are formed when a river winds around alternating bands of resistant rock that it does not have the energy to cut through.

3.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Waterfalls form when a river meets a band of less resistant rock. This rock erodes more quickly and a dip or step is created in the river channel. Through processes of hydraulic action and abrasion, this step is deepened and forms a plunge pool. As water swirls around in the plunge pool, it begins to undercut the more resistant rock that lies on top of the less resistant rock. Over time, an overhang of resistant rock develops with the less resistant rock beneath it continuing to be undercut. The plunge pool is also being deepened by hydraulic action and abrasion. Eventually, the overhanging resistant rock will collapse under gravity and the waterfall will move up the river.*

3.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Meanders are formed when a river meets a small obstacle, forcing it to slightly change its course to bend around the obstacle. Erosion through hydraulic action will take place on the outside of this curve because the water is flowing faster. This will make the bend more pronounced. On the inside of the*

bend, the water flows more slowly and will deposit material. Over time, erosion on the outside of the bend and deposition on the inside of the bend will combine to form large meanders in the river.

3.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 3 shows a large meander in the river. In the future it is likely that the neck of the meander will narrow, allowing the river to cut through this neck and take a straighter course. This will happen because water moves faster on the outside of a bend and erodes the river bank through hydraulic action. Erosion on both bends in the meander neck will mean the neck cuts through, leaving the meander cut off from the river as an ox-bow lake.*

3.5 Erosion

3.6 Deposition

3.7 Flood plains are large areas of flat land either side of a river.

3.8 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Levées are mounds of sediment either side of a river and are typically found in the lower course. They are formed through repeated river flooding. When a river bursts its banks, it spreads across the flood plain and slows down. As it slows, deposits the material it is carrying. The river will deposit the largest material first and this takes place either side of the river channel, gradually forming levées.*

3.9 Deposition takes place when a river slows down. In a river estuary, the river meets the incoming sea. This will slow the flow of the river and make it deposit what it is carrying.

3.10 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *The River Tees has its source in the Pennines and flows from the Pennines to its mouth in the North Sea near Stockton-on-Tees. It is famous for High Force Waterfall, which was formed because the river is flowing over resistant rock called dolerite but meets a band of less resistant rock called limestone. The limestone erodes more quickly than the dolerite through processes like hydraulic action and abrasion. This led to a step in the river channel and over time, continued erosion created a 20m drop with a large*

plunge pool at its base. Water swirling around in the plunge pool undercut the dolerite cap rock which collapsed meaning the waterfall retreated upstream to form a gorge.

The Tees also has many meanders in its middle course, particularly at the town of Yarm, which is enclosed by a large meander. Meanders are formed because water flows faster on the outside of a bend, enlarging the bend through hydraulic action and abrasion. At the same time, the slower water on the inside is depositing sediment, leading the formation of large meanders.

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Chapter 19

All exemplar answers given are worth full marks.

1.1 C

1.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Geology can affect flood risk because the rock type can be permeable or impermeable. If the geology is impermeable, then water will not soak into the rocks and the soil overlaying the rock will become saturated, increasing surface runoff. If the relief is steep hillsides, then water will flow downhill very quickly into rivers, increasing the risk of flooding.*

1.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Deforestation as seen in Figure 1 can increase the risk of flooding because there is less interception. This means that when it rains, instead of some water sitting on leaves and evaporating back into the atmosphere, more water reaches the ground. This therefore means that more water reaches rivers through surface runoff, increasing the risk of flooding.*

Other land use changes, such as removing hedgerows or other natural vegetation, will have the same effect. Urban areas increase flood risk because they involve replacing natural vegetation with impermeable surfaces like concrete and tarmac. Water runs off these surfaces very quickly and is carried to rivers through drains which will increase the risk of flooding.

1.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms

Marks	Description
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I partially agree with the statement because without the natural factor of precipitation, then flooding would not happen. In addition to this, other natural factors such as the geology of an area can make flooding more likely. For example an area composed of impermeable rock or with steep relief is more likely to flood. So natural factors have a large impact on whether a flood will take place.*

However, human activity can both make flooding more likely and make flooding a hazard. If humans did not build on flood plains, for example, then most floods would not be hazardous. Furthermore, removing natural vegetation for farming reduces interception meaning surface run of increases and makes flooding more likely. Building urban areas on flood plains means there are many impermeable surfaces and water is transported to rivers much more quickly increasing the likelihood of flooding.

So humans can make floods more likely to be hazardous but without the natural factor of precipitation flooding would not happen, meaning I partially agree with the statement.

Answers disagreeing with the statement should be credited if they are supported with appropriate examples.

2.1 Discharge is the volume of water in a river passing a specific point. It is measured in m^3 per second (cumecs).

2.2 The river's discharge rose rapidly from 28 cumecs to a peak of 140 cumecs. This took a total of 27 hours. From its peak, it then decreased to about 8 cumecs over the next 43 hours.

2.3 B

2.4 48 cumecs

Accept answers between 46–50 cumecs.

2.5 52 hours

Accept answers between 50–54 hours.

2.6 C

2.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *The hydrograph for drainage basin A is much 'flashier' than drainage basin B. This means that the water levels rose and fell much more quickly and also peak discharge was much higher. However, both storms had similar amounts of rainfall.*

One reason for the different shapes could be that drainage basin A is for a river in a heavily urbanised area. This would mean that there are many impermeable surfaces like tarmac, concrete and tiled roofs that would mean that water cannot soak slowly into the soil. It would also mean that water enters human-made drains that carry water quickly into rivers, thus decreasing the lag time and meaning a lot of water is carried to the river very quickly. Drainage basin B might have a lot of natural vegetation that intercepts rainwater or lets it soak into soils meaning it arrives at the river slowly as through flow rather than surface runoff.

Finally, some other physical factors explaining the difference is that drainage basin A might have impermeable rocks and steep slopes and drainage basin B permeable rocks and gentle slopes. These factors would also explain the differences in lag time and peak discharge.

3.1 Hard engineering involves building physical structures to try and stop flooding taking place.

3.2 Dams and reservoirs stop flooding because the dam is a physical barrier build across the river that holds the water in the reservoir behind. Flooding is stopped because the flow of water downstream can be controlled by opening or closing gates in the dam.

3.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Channel straightening is an expensive process that also has ongoing maintenance costs as the river erodes the artificial channel. Straightening the river with concrete also destroys natural ecosystems and therefore reduces biodiversity. A benefit is that water is moved more quickly through flood prone areas, meaning that water does not build up which reduces the chances of flooding. However, a cost of doing this is that flood risk is increased downstream because water is arriving more quickly.*

3.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The benefits of flood relief channels are that they divert water from areas that are prone to flooding. For example, a flood relief channel could move water away from an urban area where the cost of flooding would be high. A cost is that they are expensive to build and there can be ongoing maintenance costs. Another cost is that when the relief channel re-joins the main river channel then the volume of water is increased, which can increase the risk of flooding downstream.*

3.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Some people might oppose restoration because they might be worried that their land or property will suffer from flood damage. River restoration involves removing flood defences like artificial embankments. These embankments would have been built to protect land from flooding, so when they are removed, that land would be prone to flooding, which would damage the property and bring an economic cost to the people who live there. In addition, river restoration is expensive, and people might be opposed to the cost of using these schemes.*

3.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Flood plain zoning has many benefits but does have drawbacks. Flood plain zoning involves letting the land flood and zoning how the land either side of the river is used so that economically valuable land or land with houses and industry is zoned furthest from the river. This is effective at reducing the economic cost of flooding and has the added benefit of not interfering with natural processes. This*

means that places further downstream do not suffer from increased flooding. This is the biggest benefit because it makes this a sustainable approach.

However, land use zoning does not stop the flood, so it might be the case that some land (such as parkland) will be closed as it will be flooded. It is also difficult to do after developments have taken place over many years, so it is not suitable for every location. Overall, flood plain zoning is highly effective in places that are suitable because the cost of flooding is minimal and natural processes are not interfered with.

3.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Hard engineering strategies like flood embankments or relief channels are very effective at reducing flooding in the place where they are used. Flood embankments increase the channel capacity meaning that more water can be held in the river channel. Their effectiveness is the main benefit, but they also provide reassurance to people and certainty to property owners and businesses. The flood barriers in Figure 3 are demountable, so they are only put up when there is a high flood risk. This means they do not affect the natural beauty of an area as much as permanent flood embankments do.*

However, hard engineering is very expensive and normally involves ongoing maintenance costs, making them even more expensive over a long period of time. The biggest cost is that they interfere with natural processes and increase the risk of flooding where the defences stop. How much of a drawback this is depends on the specific location of the defences and how the land at an increased risk of flooding is used.

3.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *A range of strategies is needed to manage rivers because different strategies might be appropriate for different places along the river. In places with large populations and economic activity, it is often more appropriate to build hard engineering schemes like those in Figure 3. Flood embankments can be used successfully to protect places from flooding, but they are expensive to build and maintain so are only used where land has a lot of economic value. They also make flooding worse further downstream so they should not be used if other strategies are available.*

Strategies like flood plain zoning (Figure 4) are more sustainable but can only be used in some locations because they require the land to be available that flooding can be allowed to take place on. It is possible to use a range of strategies, like at Banbury, where storage reservoirs were built alongside extra flood embankments on land used for industry and housing. I therefore agree with the statement.

Answers disagreeing with the statement should be credited if they are supported with appropriate examples.

4.1 Natural habitats would be destroyed.

Accept other suitable answers that refer to Figure 5.

4.2 People might be temporarily homeless because their houses have flooded.

Accept other suitable answers that refer to Figure 5.

4.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Shops and businesses would lose money through being flood damaged. For example, stock might be ruined and need to be replaced. There would be costs to redecorate the business and finally they would lose money through being closed to customers.*

4.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Flood management was needed in Banbury because the town had a long history of flooding. In 1998, flooding caused £12.5m of damage with further flooding in 2007 meaning management was needed to reduce the impact of future floods.*

Answers will vary depending on flood management schemes studied.

4.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The Banbury flood management scheme was completed in 2012 at a cost of £18.5m. It used a number of methods to reduce flood risk in the future.*

Firstly, a 2.9 km flood embankment was built to create a storage reservoir for water before the river reaches Banbury. This means that the quantity of water reaching the town could be reduced and controlled, which would reduce the risk of flooding. Secondly, further embankments were built at the Wildmere and Prodrive industrial estates. This means that at these locations of high economic value the river is less likely to burst its banks because the land is protected by embankments, thus reducing the risk of flooding.

Answers will vary depending on flood management schemes studied.

4.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The Banbury flood management scheme, which opened in 2012, created a number of positive social effects. By raising the A361 and ensuring that it could remain open in times of flood, people were still able to travel to work or into the town for shopping or recreation. Economically, the scheme was*

expensive: it cost £18.5m. However, the value of the houses and businesses protected by the scheme was £100m, which made the scheme very good value for money.

Answers will vary depending on flood management schemes studied.

4.7 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Flood management in Banbury has caused some positive environmental issues. Firstly, the flood control structures are passive and operate automatically without electricity or staff. This means that they are entirely responsive to natural conditions ensuring that they operate automatically whenever the local environment requires. Secondly, a large reservoir was dug to store flood water. This has been converted into a country park with new trees, hedgerows, and ponds. This supports local biodiversity and is an important part of Banbury's Biodiversity Action Plan.*

Answers will vary depending on flood management schemes studied.

4.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The flood management scheme at Banbury, which opened in 2012, has been very successful. The scheme has been successful because the benefits of the scheme vastly outweigh the costs. The scheme cost £18.5m but the value of the properties and businesses protected is over £100m. Flooding in 1998 had caused £12.5m worth of damage, so this new scheme is comprehensive in ensuring that Banbury businesses and residents will not suffer from flood damage in the future.*

Along with the flood embankments and storage reservoir, the scheme also led to the creation of a new recreational space. The Borrow Pit that provided earth for the embankments was turned into a country park. This makes the scheme even more successful because as well as Banbury being protected from flooding, the environment was improved by increasing biodiversity in the area.

Answers will vary depending on flood management schemes studied.

5.1 Abrasion is when stones carried by the river scrape away at the riverbed and banks.

5.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Waterfalls form when a river flowing over resistant rock meets a band of less resistant rock. The less resistant rock erodes more quickly, creating a small step in the river. Over time, a larger drop develops, creating a waterfall. At the base of the drop, erosion (through hydraulic action and abrasion) creates a deep plunge pool and undercutting of the more resistant rock also takes place. Geology is crucial in explaining waterfall formation because they only form when resistant rock is overlaying less resistant rock, allowing different rates of erosion to take place.*

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Chapter 20

All exemplar answers given are worth full marks.

1.1 Freeze–thaw weathering

Accept other suitable answers.

1.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 1 shows a scree slope that would have been formed by freeze-thaw weathering. Exposed rocky mountain faces have cracks and weaknesses in them. Rainwater gathers in these cracks and when the temperature drops, this water freezes. As it freezes, it expands, which forces the crack apart. Over time, repeated freezing and thawing leads to fragments of rock breaking off and gathering in a slope called a scree slope.*

1.3 As a glacier moves, it might freeze around a piece of rock that is loose. As the glacier continues to move, it is frozen to this rock and pulls it off the rock face in a plucking action.

1.4 Pieces of rock might be frozen into the base of the glacier. Abrasion is the name given to the erosion that takes place when the glacier moves and these rocks scrape along the valley floor, wearing it away.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary

Level	Marks	Description
	0	No relevant content

Example answer: *Glaciers move through the action of gravity pulling the weight of the glacier downhill. They move through ice deformation, which is when ice breaks and reshapes, resulting in a downhill movement. They also move because the pressure of the ice melts ice underneath the glacier, lubricating the base and helping it slide downhill. When the landscape is curved, this sliding motion is called rotational slip.*

1.6 Bulldozing is when glaciers push material along in front of the glacier as they move.

1.7 Glaciers transport material when rocks are frozen within the glacier and transported as it moves.

2.1 A and D

2.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *A corrie is a large armchair-shaped hollow. They are formed when snow gathers in small hollows and is compressed into ice. As more snow builds up and more ice is formed, there is greater pressure at the base of the ice. Gravity will start to pull the compressed ice down the valley, and it will begin to move via rotational slip. As it moves, it will scrape at the base of the hollow, deepening it through abrasion and removing more material through plucking. Plucking will also take place at the back of the hollow, creating a steeper back and an armchair shape.*

2.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Figure 2 shows a glacial trough or U-shaped valley and truncated spurs. The glacial trough is formed when the glacier moves downhill in a V-shaped river valley and (through erosion) deepens and widens it into a U-shaped valley.*

The glacier moves from high up in the mountain through basal slip. This is when the pressure melts the ice underneath the glacier, lubricating the bottom and allowing it to be moved by gravity. As it moves, abrasion takes place when rock fragments frozen into the glacier scrape away at the valley sides and base. Plucking also takes place as the glacier freezes around rock fragments and pulls them loose as it moves. These processes carve the U shape of the glacial trough.

The river valley would also have interlocking spurs, which are alternating bands of more resistant rock. As the glacier moves, the erosive power is so great that it cuts these spurs away, leaving the truncated spurs seen in Figure 2.

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Ribbon lakes form when glaciers move downhill and carve a glacial trough. As they are eroding the glacial trough through abrasion and plucking, they sometimes meet a band of rock that is less resistant than the rock they are moving over. The less resistant rock will erode more easily and therefore deepen as the glacier moves over it, leaving a large hollow in the base of the valley. When the glacier melts, the hollow is filled with meltwater and rainwater, creating a long ribbon lake.*

2.5 A: lateral moraine

B: medial moraine

2.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Cadair Idris in Snowdonia in North Wales has a corrie called Llyn Cau. This was formed when snow accumulated in a hollow or depression and compacted into thick ice. Under the influence of gravity, the ice started to move downhill via rotational slip. As it moved, it deepened the hollow through abrasion and plucking. The back of the hollow became steeper as plucking removed rock fragments and freeze-thaw weathering also led to fragments of rock breaking off. Over time, this created the steep back armchair-shaped hollow of Llyn Cau.*

Answers will vary depending on the glaciated upland area studied.

3.1 The grid square contains a glacial trough. The southern and north-west sections of this grid square are very steep slopes rising to approximately 300 m above sea level. In between these steep slopes in the centre of the grid square is a flat valley floor.

3.2 C

3.3 A tarn or corrie **(accept either answer)**

3.4 Facing south-west.

3.5 D

3.6 514 m

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Chapter 21

All exemplar answers given are worth full marks.

1.1 Farming

Suitable alternative answers include forestry, quarrying, and tourism.

1.2 Forestry brings employment when large areas of land are used to grow coniferous trees. People will be employed to manage the trees and cut them down when it is time for harvesting. This will also provide wealth for the upland area which will be spent in the local community supporting other businesses.

1.3 Farming involves using upland areas to graze sheep. This brings employment and income when the sheep's wool is sold and also when lambs are sold for meat. This creates wealth in the upland area which will be spent in the local community supporting other businesses.

1.4 Quarrying involves extracting valuable rocks like slate or granite from the upland area. This brings employment and income when rocks like slate are sold for roofing tiles. This creates wealth in the upland area which will be spent in the local community supporting other businesses.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Both farming and tourism create employment in upland areas. This means these industries generate wealth through providing income for local people. This money can be spent in the local economy supporting other businesses. Tourism has the largest impact. Farming opportunities are quite limited and sheep farming and lambing does not create a large number of jobs. Tourism opportunities are much more extensive with hotels, restaurants, and activity centres employing large numbers of people.*

1.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Glaciated upland areas provide a variety of opportunities for economic development. Farming is one such opportunity. Although the soils are poor quality being thin and acidic, the land is still suitable for activities like sheep farming. This makes use of the steep mountain slopes, providing employment and creating wealth for the area. Sheep farming can also work alongside tourism because sheep farming does not interfere much with popular tourist activities like walking. Tourism offers a variety of opportunities for economic development and the Lake District in north-west England and attracts 15.8 million tourists each year. The visitors come to enjoy the spectacular scenery, as well as to go walking, mountain biking, and kayaking. They may also visit to enjoy historic and cultural attractions like William Wordsworth's home. This means that lots of money is spent in the local economy in shops, hotels, and restaurants. There are over 15 000 jobs in the tourist industry in the Lake District which demonstrates the significant opportunities that tourism provides.*

2.1 Tourists can conflict with locals when they are noisy and do not respect local ways of life.

2.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The farming industry in upland areas can conflict with the demands of the tourist industry. People might visit upland areas to enjoy the scenery and walk and bike on the mountain slopes. When areas are also used for farming then tourists might leave gates open, allowing sheep to escape, or tourists' dogs might not be kept on their leads, meaning they attack the sheep and lambs. Quarrying can also conflict with the tourist industry. Tourists are interested in peaceful environments and beautiful scenery. Quarrying creates lots of noise and dust pollution with heavy vehicles transporting goods. This conflicts with the reasons why tourists come to visit, meaning they are more likely to go somewhere else in future.*

2.3 Ecosystems are damaged when infrastructure like roads and visitor centres are built to cater for large numbers of tourists.

Accept suitable alternative answers.

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Quarrying conflicts with the need for conservation because it is an industrial activity that destroys local ecosystems when land is removed to gain access to rocks like slate. In addition quarrying creates lots of dust pollution and the road infrastructure also destroys ecosystems. Forestry replaces diverse natural ecosystems with large areas of single species trees. This means that ecosystem biodiversity is reduced and ecosystems that supported a range of bird, animal, and insect species are removed.*

2.5 Damage to ecosystems caused by off-road vehicles.

2.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	4–6	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–3	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	● Accurate spelling and punctuation ● Rules of grammar followed ● Effective control of meaning ● Uses wide range of specialist terms
2	● Generally accurate spelling and punctuation ● Most rules of grammar followed ● General control of meaning ● Uses good range of specialist terms
1	● Reasonably accurate spelling and punctuation ● Some rules of grammar followed – errors do not hinder meaning ● Some control of meaning ● Limited use of specialist terms
0	● Writes nothing ● Does not relate to question ● Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *I do not believe that the need for conservation outweighs the benefits of economic development. This is because the benefits of economic development are widespread and support large communities in glaciated upland areas. In the Lake District the tourist industry provides 15 000 jobs and tourists spend over £1000m in the local area each year. This brings huge benefits to the local area through providing people with an income to support themselves and their families raising taxation that pays for public services. As figure 2 shows, there are environmental costs to this development. Off-road vehicles and walkers damage local ecosystems, which reduces biodiversity. However, it is possible to balance the needs of the environment. Tourist activity can be concentrated in honeypot locations so that damage to the*

environment is contained and the money created can pay for conservation projects. Initiatives like the Fix the Fells project in the Lake District show that the spectacular environment that tourists come to enjoy can be maintained. Economic development therefore outweighs the needs for conservation because the benefits of economic development can also contribute to conservation.

3.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The Lake District in north-west England has spectacular landscapes and scenery. This attracts tourists because they enjoy activities like walking and mountain biking in these glaciated landscapes. Honeypot centres like Keswick have many marked paths and trails, making it easy for people to enjoy these activities. The Lake District also offers more adventurous activities, meaning it appeals to a range of people. Tourists can engage in activities like abseiling and rock climbing.*

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *A social benefit is that many of the facilities built for tourists can also be used by local people. So local people benefit from better road infrastructure and leisure facilities meaning their quality of life is improved. An economic benefit is that many jobs are created. This means local people can support their families, buy houses, and also spend money in the local economy supporting a whole range of businesses.*

3.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Local people might be opposed to tourist development because when places become popular it creates noise and traffic congestion which can lower the quality of life for people who live there. Farmers might be opposed because large numbers of walkers might damage their crops or leave gates open, allowing animals to escape.*

3.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *One impact of tourism is the increase in traffic congestion. This has been managed in the Lake District through park and ride schemes combined with additional public bus services like the Honister Rambler. Park and ride schemes remove cars from the road but are only successful if they offer reliable and cost-effective services. The Honister Rambler and the cost-effective 'park and explore' tickets are convenient for tourists and therefore are effective at reducing traffic congestion.*

3.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	4–6	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–3	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	● Accurate spelling and punctuation ● Rules of grammar followed ● Effective control of meaning ● Uses wide range of specialist terms
2	● Generally accurate spelling and punctuation ● Most rules of grammar followed ● General control of meaning ● Uses good range of specialist terms
1	● Reasonably accurate spelling and punctuation ● Some rules of grammar followed – errors do not hinder meaning ● Some control of meaning ● Limited use of specialist terms
0	● Writes nothing ● Does not relate to question ● Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer*: I agree that the benefits of tourism outweigh the negative impacts. This is because tourism is vital to the whole economy of glaciated upland areas. In the Lake District there are 15 000 jobs in the tourist sector with tourists spending £1000m per year in local hotels, cafes, and shops. This money pays local people's wages, allowing them to own houses, support their families, and have a good quality of life. Although there are negatives to tourism, these can be effectively managed. The problem of second home ownership, for example, where tourists drive up the costs of housing meaning that local people cannot afford homes, can be managed. The Lake District National Park Authority reserves new housing for locals and the council also requires housing developments to include housing that is affordable to locals. This*

therefore means that tourism, which provides many jobs, does not then also drive locals out of the area. Environmental damage can also be managed with schemes that repair footpaths and restore biodiversity. These schemes often receive funding from the tourist economy, showing that the negative impacts can be directly addressed by using the money that tourism brings to the area.

4.1 Large boulders left behind by glaciers that are a different geology to the place they have been deposited.

4.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *A pyramidal peak is formed when three corries back onto each other. Each corrie has a steep back that is formed through freeze thaw weathering breaking fragments of rock from the exposed rocky outcrops. The steep backs are also formed when the glacier moves downhill from the corrie through rotational slip. As it moves it will pluck loose fragments of rock from the back of the corrie creating the steep back. When three corries back onto each other they create a sharp pyramidal peak where they meet.*

4.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer*: A drumlin is formed when glaciers meet an obstruction and deposit material they are carrying. As the glaciers continue to move, they move over the deposited material, shaping it into the egg-shaped hill that is left behind. This hill has a steep blunt end moving into a gently tapered slope, formed as the glacier moves over the deposited material and smooths it out.*

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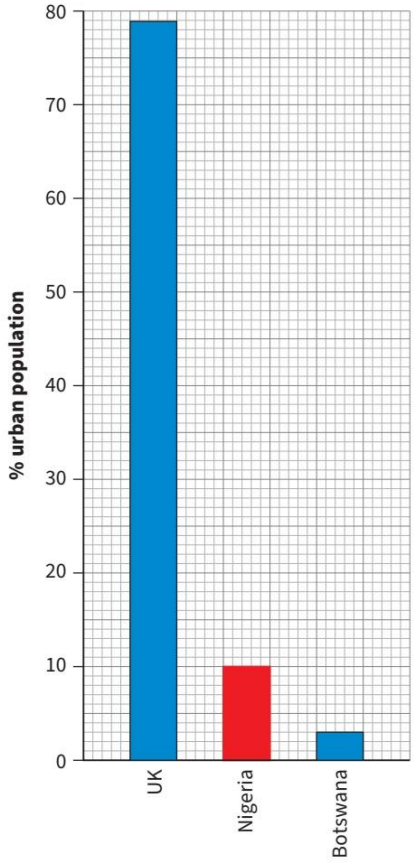
Chapter 22

All exemplar answers given are worth full marks.

1.1 D

1.2 The bar chart should be completed as below:



1.3 It's likely that the UK bar would be slightly higher today. The Nigeria bar would likely be much higher today, with the percentage of urban population at around 50%. The height of the Botswana bar would also increase, but not by as much as the Nigeria bar.

1.4 HICs have quite stable urban populations and, in some places, urban populations are decreasing because of counter urbanisation. In LICs there is currently rapid increase in the proportion of people living in urban areas. This includes the development of some megacities with more than ten million people.

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Chapter 23

All exemplar answers given are worth full marks.

1.1 **Any one of:** finance, education, tourism, or retail.

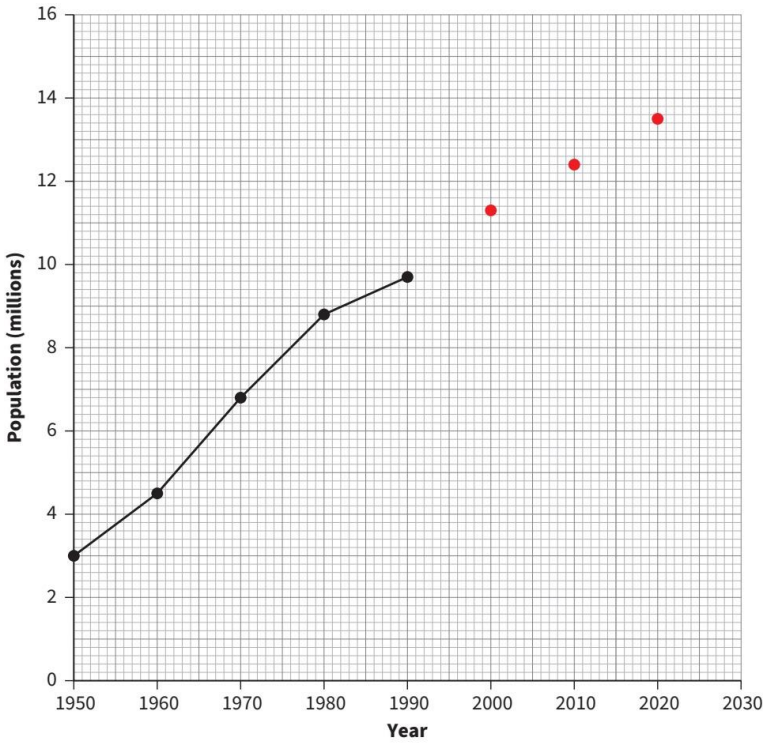
1.2 Farming is hard and poorly paid, widespread poverty, limited services, e.g. education and health care, in rural areas.

Accept suitable alternative answers.

1.3 A squatter settlement is an unplanned area of poor-quality housing that is often illegal. Squatter settlements often lack basic services such as electricity and sanitation.

1.4 Rio de Janeiro in Brazil has seen a dramatic increase in its population, from 3 million in 1950 to 6.7 million in the city itself and 13.5 million in the surrounding area in 2020. This is mainly due to migration but also high rates of natural increase.

1.5 The graph should be completed as below. Students may draw a line to connect the points.



1.6 The percentage change is 8.87%.

13.5 million – 12.4 million = 1.1 million

1.7 The expected population in 2030 is 14,697,459.

8.87% of 13,500,000 = 1,197,450

13, 500,000 + 1,197,450 = 14,697,459

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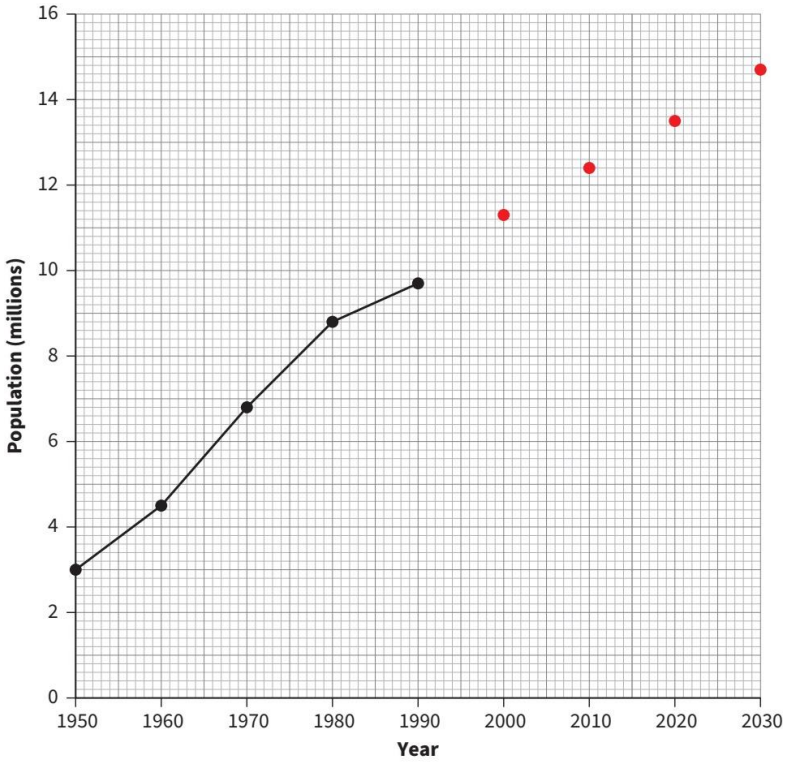
1.8 The graph should be completed as below. Students may draw a line to connect the points.



1.9 The population has consistently increased from 3 million to 13.5 million between 1950 and 2020. It increased very rapidly between 1960 and 1970 and the increase was slightly slower between 1980 and 1990. The rate of increase became more rapid again after 1990.

2.1 Figure 3 shows cramped housing conditions built very close together with many people sharing each home. These homes are often illegal, built in hazardous locations, and lack basic services such as rubbish collection and public transport services.

2.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary

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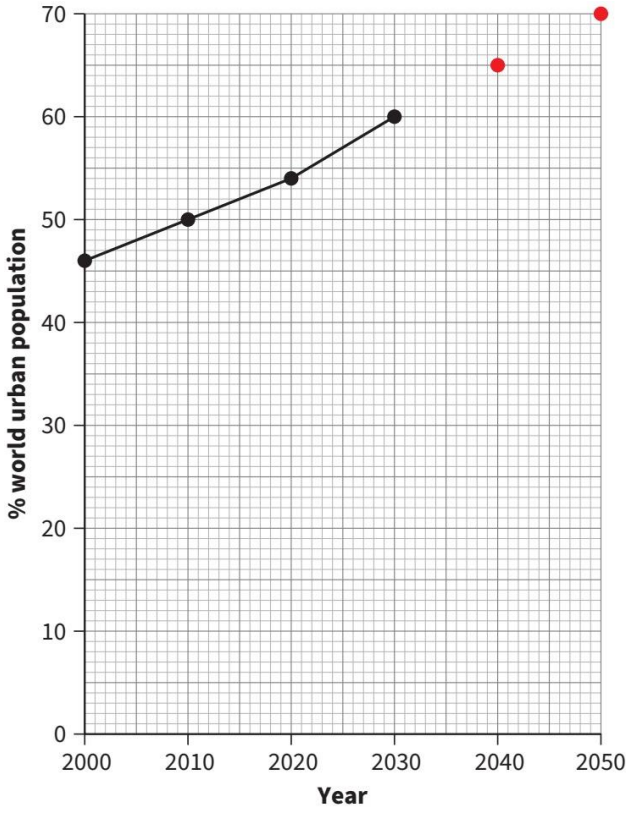
Level	Marks	Description
	0	No relevant content

Example answer: *Rio de Janeiro in Brazil has seen rapid population growth since 1950, with numbers increasing from 3 million to 13.5 million. This has created many challenges for the city in terms of providing basic services. Due to insufficient schools and teachers only about 50% of children continue their schooling past the age of 14 and 25% of children do not go to school at all. Therefore children grow up with a lack of qualifications which has resulted in high rates of youth unemployment and has meant that young people often work in the low-paid informal sector with a lack of security and future opportunities. Furthermore, high rates of unemployment can be linked to the high crime rates that exist in Rio.*

Providing health care is another serious challenge. Access to a health centre is only available to those that can pay and only 55% of the population has a local health centre. This means that infant mortality rates are higher and life expectancy is much lower in some parts of the city than others. Poor health also means that people struggle to work and earn money for their families which creates more poverty.

2.3 The graph should be completed as below. Students may draw a line to connect the points.



2.4 A megacity is a city that has a population of ten million or more.

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2.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Urbanisation rates tend to be higher in NEEs and LICs. Rates of urban growth were previously very high in HICs due to earlier industrialisation but have now slowed due to the process of counter-urbanisation as increasing numbers of people want to move away from the busier cities. In NEEs and LICs industrialisation is happening now which triggers rural-to-urban migration as people move to the cities in search of the better-paid jobs. This is due to both natural increase and rural-to-urban migration.*

Natural increase is also important to rates of urbanisation in LICs and NEEs. As Improvements to health care are made in urban areas in LICs, death rates drop and urban populations increase. In addition, high proportions of young people in urban areas means that more children will be born, increasing overall rates of urbanisation.

2.6 C

2.7 Kershar and his family live in a house that only has two rooms and there is poor sanitation because it is 'smelly with open sewers'. Kershar's father has 'irregular' work and the children 'scavenge for scrap' every afternoon for their father to sell.

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2.8 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *There are around 800 favelas in the city of Rio and these pose significant management challenges. Many of these, such as Rocinha, are built on steep hillsides which make them vulnerable to landslides during periods of heavy rain. The steepness of the slopes means there is limited road access so it is hard for residents to get in and out. In addition, the favelas are often dominated by drugs gangs and residents do not usually trust the police or the authorities, meaning overall crime rates are exceptionally high. In the favelas of Rio the murder rate is 20 per 1000 people.*

2.9 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	4–6	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–3	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

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3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	● Accurate spelling and punctuation ● Rules of grammar followed ● Effective control of meaning ● Uses wide range of specialist terms
2	● Generally accurate spelling and punctuation ● Most rules of grammar followed ● General control of meaning ● Uses good range of specialist terms
1	● Reasonably accurate spelling and punctuation ● Some rules of grammar followed – errors do not hinder meaning ● Some control of meaning ● Limited use of specialist terms
0	● Writes nothing ● Does not relate to question ● Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Rio de Janeiro, a city in south-east Brazil, has seen rapid population growth since 1950. The population has grown from 3 million to 13.5 million which has created many challenges for the city authorities in terms of providing basic services and managing the consequences of rapid population growth.*

One of the most significant management challenges is housing the ever-growing population. Favelas spring up, mainly in the suburbs of the city, and cause many issues. Around 12% of homes do not have running water and 30% do not have electricity. Those that do have electricity have often acquired it illegally, which can be very dangerous for the authorities to manage.

Insufficient schools and teachers means that only about 50% of children continue their schooling past the age of 14 and 25% of children do not go to school at all. Therefore children grow up with a lack of qualifications which has resulted in high rates of youth unemployment and has meant that young people often work in the low-paid informal sector with a lack of security and future opportunities. Furthermore, high rates of unemployment can be linked to the high crime rates that exist in Rio. This is exceptionally difficult to manage because there is a deep mistrust between the local favela residents and the city police and authorities. This means that some favelas can become 'no go' zones for all the Rio residents.

Rapid urbanisation and economic development in Rio has also led to large-scale environmental problems. Industry is not tightly regulated and there is a lot of pollution in Guanabara Bay. There is also now greater traffic congestion in Rio as the amount of cars has increased by 40% over the past ten years. This causes high levels of air pollution which then leads to approximately 5000 linked deaths per year. This pollution problem is very difficult for the city authorities to manage because favelas have poor road networks, meaning that public transport cannot access them very well. Furthermore, people still prefer to travel by car because of the city's high crime rate. The isolated nature of the favelas has also made the problem of waste collection difficult to manage. As a result, much waste is dumped which pollutes the water supply, causing diseases like cholera.

In conclusion, I think the largest management issue for the city authorities in Rio is the issue of providing basic services for the ever-growing population. Improving education would have wider implications such as

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reducing unemployment which therefore reduces crime and in turn builds a stronger bond between the communities and the authorities.

3.1 Rio is regionally important because it is seen as the cultural capital of Brazil with a big music scene and carnival. It also is an industrial hub within Brazil providing considerable employment opportunities.

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The population of Rio de Janeiro and its surrounding area has grown rapidly to 13.5 million. This is due to people migrating from other parts of Brazil such as the Amazon rainforest and also from other countries in South America, such as Argentina and Bolivia. People are migrating due to the growing importance of Rio as an industrial, commercial and finance centre that offers a range of employment opportunities. Rio is also seen as the cultural capital of Brazil with an exciting lifestyle, a fact that attracts young migrants.*

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Chapter 24

All exemplar answers given are worth full marks.

1.1 A: Cardiff

B: Edinburgh

1.2 Large areas of Scotland are sparsely populated because they experience harsh weather, and they are upland areas that means they are remote and inaccessible.

1.3 Areas in the UK that are densely populated are London and the South East, the Central Lowlands of Scotland, the urban areas of Northern England and the Midlands, South Wales and North East England.

1.4 D

1.5 The major cities of the UK are found mainly in England, with London being the largest and several cities such as Leeds, Manchester and Birmingham found in the Northern and Midlands area. Glasgow and Edinburgh are found in the Central lowland area of Scotland.

2.1 **Any two pull factors from:** better paid jobs, better services such as health care and educational opportunities, a wider range of entertainment and friends and family already living there.

2.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The consequences of uncontrolled rural-urban migration has resulted in the development of favelas, which are unplanned, dangerous, and often illegal settlements. Residents arrive in the city and struggle to find work resulting in unemployment rates of up to 20%. Favelas sometimes lack basic services such as running water, sanitation, and electricity. This lack of services can lead to poor standards of living and health. With very high rates of population densities, diseases can spread very quickly, and infant mortality rates can be as high as 50 per 1000.*

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Chapter 25

All exemplar answers given are worth full marks.

1.1 Name of major UK city: Bristol

Location in the UK: South West

Importance in the UK: Largest city in the South West of England, with two large universities. The 8th most visited city by tourists coming to UK. Largest concentration of silicon chip industries outside of California. Range of culture – home to the creators of Wallace and Gromit.

Answers will vary depending on the major UK city studied.

1.2 A service industry that Bristol is internationally important in is tourism. It is the 8th most visited city.

Accept suitable alternative answers.

1.3 Two challenges that Bristol faces due to migration are increasing pressure on housing and employment and pressure on schools to teach children whose first language is not English.

Accept suitable alternative answers.

1.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Migration has had a significant impact upon the character of Bristol. Half of Bristol's current population growth is due to migration from abroad, with the majority of new arrivals coming from Poland and Spain. This has created positives such as the contributions made to the local economy and the contribution they make to the cultural life of the city for instance the St Paul's Carnival. Migration also creates challenges such as some problems integrating migrants into the wider community and the pressure migrants place on housing, employment and schools.*

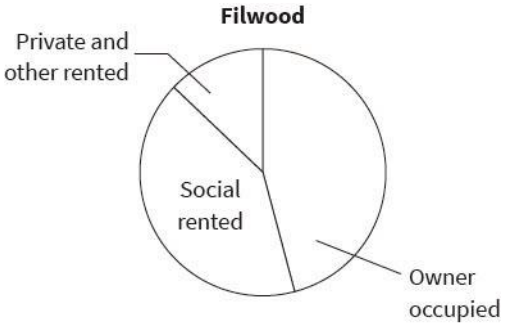
Accept suitable alternative answers.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Bristol is a city in the south-west of England. It is an important city because it is the largest city in the south-west, with a population of around 460 000, which is expected to rise to half a million by 2029. Bristol has two major universities that attract students from all over the world. They produce graduates who often go on to work in the knowledge and high-tech economy as well as the creative industries. This is important because Bristol has developed into a city with the largest concentration of silicon chip industries outside California and is also home to Aardman. the makers of Wallace and Gromit.*

2.1 The pie chart should be completed as below:



2.2 The pie charts in Figure 2 show housing tenure in two contrasting wards in Bristol. Both pie charts show that the largest type of tenure is owner occupied. However, it is significantly higher in Stoke Bishop with 75% compared to Filwood where only 46% of homes are owner occupied. Another big difference is the % of people who are in social rented housing which is 29% higher in Filwood than in Stoke Bishop. Both areas have the same rates of private rented at 13%.

2.3 Two benefits of urban greening are increasing the amount of public open spaces and parks and protecting and preserving existing wildlife habitats through the development of nature reserves.

Accept suitable alternative answers.

2.4 A brownfield site is an old industrial or housing area, often in the inner city, that has been cleared for a new development to be built.

2.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Bristol is a city in the south-west of England where recent urban change has created some environmental challenges. Deindustrialisation and the closure of the port led to some inner-city areas, such as Stokes Croft, having many derelict buildings that can attract anti-social behaviour and could lead to increasing crime rates. This may in turn make it harder to attract investment.*

The population increase and demand for new housing has led to urban sprawl becoming an issue, particularly to the north-west of the city. The building of new homes on greenfield sites has been controversial because it leads to the loss of wildlife habitats and biodiversity in the surrounding countryside. In addition, Bristol is the most congested city in England and building new homes in greenfield locations can increase traffic congestion and air pollution as workers commute into the city centre for work. This means that there is increasing pressure to build on brownfield sites in the centre of Bristol.

Answers will vary depending on the major UK city studied.

2.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Bristol is the largest city in the south-west of England and has experienced lots of urban change: for example, an increasing population, ethnic diversity, and improving connectivity. These changes have brought many significant opportunities for the city.*

The improved connectivity and the growth of the city has brought economic opportunities and job creation especially in the tertiary and quaternary sectors in several global companies such as Aardman Animations, Hewlett-Packard, and Toshiba. These growing sectors contribute to positive employment growth and that in 2015 Bristol had an unemployment rate below the UK average.

The changing population and redevelopment of the city has also led to cultural or social opportunities. The range of cultural influences means that there is a vibrant music and theatre scene attracting many visitors. The harbourside area has been converted from warehouses into bars and restaurants offering a diverse range of places to eat. Another important social opportunity is shopping. Bristol now has Cabot Circus, which was a £500 million redevelopment scheme with cinemas, restaurants as well as shops. These changes are clearly important as social leisure activities, but also provide important boosts to the economy.

Bristol has also seen many environmental changes that have contributed positively to the city. An integrated transport system that includes park and ride, cycle routes and high-speed Metro Buses will reduce congestion and air pollution in addition to reducing journey times. These changes make Bristol a safer greener place to live but also continue to attract industries to the area, increasing the opportunities further.

Not all urban change comes without challenges but the changes that Bristol has seen in its population, redevelopment and transport schemes, and industrial growth have created a wide range of opportunities. These opportunities together make Bristol an exciting city that will continue to be important regionally, nationally and internationally.

Answers will vary depending on the major UK city studied.

3.1 The population distribution in the UK is changing in a number of ways. Immigration has had more of an impact on large cities as immigrants settle there and increase urban populations and in general there has been a movement of people towards London and the southeast of England. In other areas, coastal and rural areas are becoming populated as older people move away from cities to retire.

3.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The population in the UK is unevenly distributed and this reflects both the physical and human geography. Figure 3 shows an area in the highlands of Scotland which, like other highland areas, is a sparsely populated upland area. This is because they are very remote and can experience very harsh weather conditions.*

In contrast, there are many urban areas and major cities that are very densely populated such as the city of Sheffield shown in Figure 3. These often reflected the industrial history of the UK when the growth of heavy industry and towns and cities often developed around supplies of coal and raw materials. People have continued to move to these cities as they develop many economic and political functions and offer more employment opportunities.

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Chapter 26

All exemplar answers given are worth full marks.

1.1 D

1.2 5971

1.3 River Avon

1.4 604 723

1.5 Temple Meads station is north of the River Avon and south of the canal. To the east of the main road A4044.

1.6 Creating more urban green space can improve sustainability by creating more parks and open public spaces that provide important places for children to play and social and community recreation spaces that improve well-being. Open spaces also provide important wildlife habitats in the urban environment and help to keep air pollution to a minimum.

1.7 This question is level-marked:

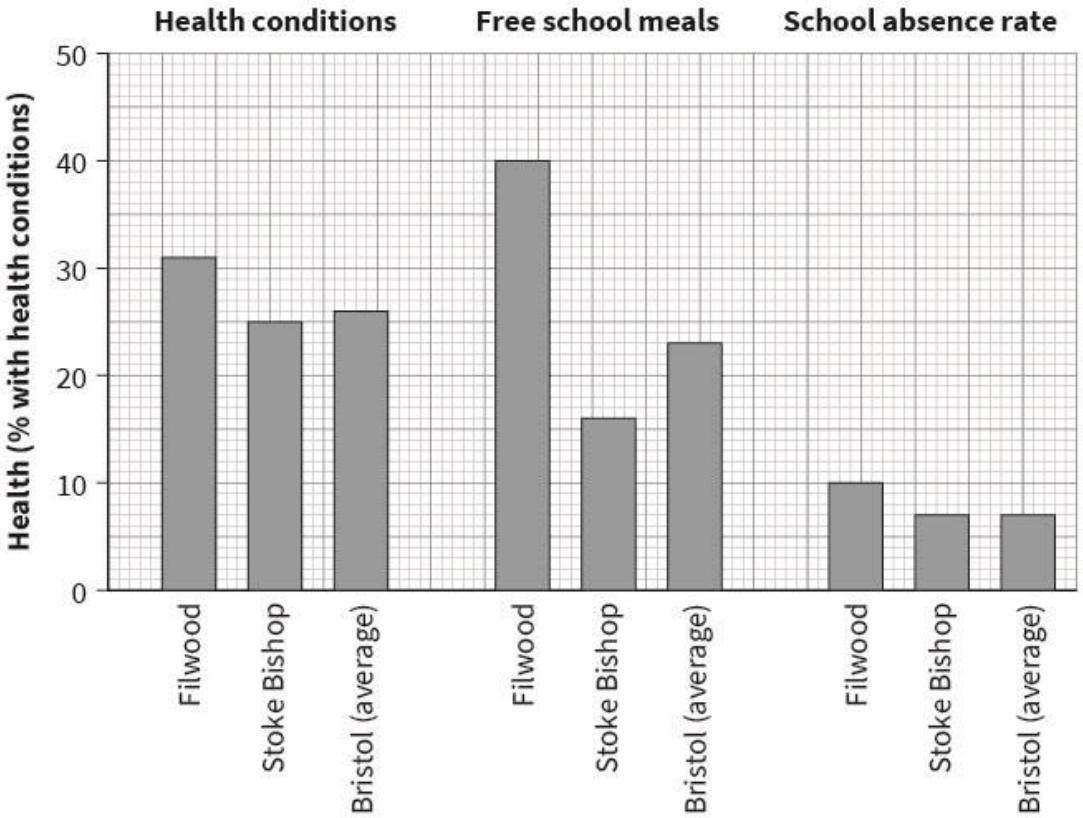
Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *An urban regeneration project in Bristol is the Temple Quarter Regeneration project. This is one of the largest regeneration projects in the UK and covers 70 hectares of the city that was previously a run-down, old industrial area where several buildings had become derelict.*

There are three main aspects to the regeneration scheme that aim to improve what the area looks like and provide economic opportunities. The area became an enterprise zone in 2012, introducing a range of incentives to attract businesses such as low rent and the redevelopment of historic buildings into new hi-tech office buildings such as the Engine Shed and the Glass Wharf. A new bridge has been built over the

River Avon to improve accessibility and a large scale redevelopment of the Temple Meads railway station has taken place making sure that the first impression that visitors have when arriving in the city is a positive one.

2.1 The bar chart should be completed as below:



2.2 Stoke Bishop

2.3 People seem to be healthier in Stoke Bishop because the percentage of people with health conditions is 25%, whereas in Filwood it is 31%: a 6% difference. This means that there are a significantly lower number of people suffering from long term health conditions in Stoke Bishop than in Filwood. School absence rate is another factor that shows that people have better health in Stoke Bishop. The absence rate is 7% compared to 10% in Filwood.

2.4 There seems to be a correlation between school absence rate and GCSE attainment rate. Higher school absence rates in Filwood means that pupils are missing more days of school, which in turn means that they are less likely to do well in their GCSE examinations.

2.5 Other data that you could look at could be crime rates and employment and income rates.

Accept other suitable answers.

3.1 Urban regeneration is when an urban area is upgraded in an effort to improve the economic and social spaces.

3.2 Figure 6 shows that the river and the surrounding area has been cleaned up to make it attractive and a path has been constructed so that people can walk alongside the canal. A second feature of the redevelopment seems to be that new modern office buildings have been built in the area.

3.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The Temple Quarter regeneration project has taken place in the city of Bristol and aims to improve run-down areas within the city centre. The area was partly chosen because of its closeness to the main railway station, which meant that this was one of the areas that visitors first saw, giving them a negative first impression of the city. The area was run-down and in need of redevelopment for a number of reasons.*

Firstly, the Temple Quarter area developed as an industrial area in the nineteenth century which meant that the buildings were now old and derelict and often empty as the traditional industries had shut down. This had led to a poor quality of environment with a lack of green open space. Secondly, there were high levels of social deprivation for those living in the residential areas, which led to high crime rates. These problems made it hard to attract any investment into the area and so the area was becoming increasingly deprived.

3.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The Temple Quarter regeneration project has taken place in the city of Bristol and has brought many improvements to the city centre site. As well as making general improvements to the quality of the environment in the area, an enterprise zone has been established in the area, which offers a range of incentives to attract businesses to the area. This has led to unsightly and derelict old buildings being turned into other functions and new industries have been attracted to the area with the aim of generating 4000 new jobs initially. Examples of this would be the famous Engine Shed that is now being used as a home for high tech and creative businesses and the Glass Wharf that has changed an old glassworks into a brand new office development.*

There has also been a big investment in the Temple Meads railway station, called the Temple Gate scheme, which, alongside improvements in the road system and the building of a new bridge over the River Avon and more cycle paths, will reduce the big problem of traffic congestion in the city and reduce car use.

3.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Traffic management schemes can make urban areas more sustainable because they reduce traffic congestion. This benefits the environment because when there is a more integrated transport system in place, fewer people use cars and move to public transport instead, which reduces the amount of harmful greenhouse gases and local air pollution.*

Local communities also benefit from the reduction in air pollution because the local environment will be better which will improve people's sense of overall wellbeing and there will be a reduction in diseases linked to air pollution such as asthma. In addition, reducing traffic congestion also improves the economic sustainability of an urban areas because it reduces the amount of time people spend in traffic jams and reduces the amount of money wasted due to delivery delays.

3.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Water and energy conservation schemes can improve the sustainability of urban areas such as Bristol. Urban residents can be encouraged through education to conserve water in their homes, which will reduce consumption. Schemes can also be introduced to harvest rainwater. One example is green roofs, which harvest rainwater that can then be used inside buildings. Another is having more green spaces and permeable pavements that allow rainwater to soak through.*

Conserving valuable water supplies makes urban areas more sustainable. In addition, reducing energy consumption can make urban areas more economically and environmentally sustainable. Local communities can be encouraged to invest in energy saving strategies such as better insulation and double glazing and to change habits and behaviour so that energy reducing appliances become the norm. New developments in the urban areas can be designed to include renewable energy, such as by ensuring they have solar panels on their roofs.

3.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Bristol is a city in south-west England. A rapidly growing youthful and diverse population, improvements in transport and accessibility and industrial growth have seen a great number of urban changes that have brought many benefits to the city and its residents. There are, however, still a number of challenges that the city faces.*

The youthful and diverse population makes the city vibrant and dynamic, offering a range of entertainment and music venues. The changes the city has seen in its industries offers a range of employment opportunities that is further strengthened by the Temple Quarter redevelopment scheme and enterprise zone. Employment growth in high tech, aerospace and creative industries is high and in 2015 the unemployment rate in Brazil was below the UK average.

In addition, alongside these economic and social opportunities there have been many changes that have improved the environment. There has been a large focus on improving the integrated transport system that links together all forms of public transport and developing new cycle routes, all with the aim of encouraging more people to stop using their cars. Alongside a big investment in green spaces and urban greening, this means that Bristol was the first UK city to be awarded the status of European Green Capital.

These big urban changes have brought obvious benefits, but the city is not without its problems. Despite employment growth, there is still dereliction and high levels of social deprivation in areas such as Stokes Croft and Filwood. The growing population also leads to an increasing air pollution and the ongoing problem of congestion.

Despite some of the ongoing challenges, I think that the opportunities in Bristol outweigh these issues and that these challenges will be reduced in the future through careful investment and planning, such as how we can see that steps are being taken to reduce traffic congestion and air pollution.

3.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Sustainable urban living requires careful social, economic, and environmental planning to reduce the negative aspects of urban life where people and buildings are competing for space and resources. There are a range of factors that can be introduced to reduce these problems.*

As populations increase, one of the most significant problems is waste disposal. To be sustainable, urban areas need to reduce and reuse waste and increase the volume of waste that is recycled. In Freiburg, a

German city, annual waste disposal was reduced from 140 000 tonnes to 50 000 tonnes in 12 years by increasing recycling to over 70%, adding community collection points for recycling, and giving every household three recycling bins and a range of city-wide schemes.

Making urban areas carbon neutral is also a challenge when populations are increasing and energy consumption going up. Alternatives to fossil fuels have to be introduced, such as renewable energy sources and other innovative strategies. In Frieburg, 28 000 homes have energy provided by burning rubbish and organic waste and the city aims to be 100% powered by renewable energy by 2050. There are many schemes to conserve both water and energy and improve energy efficiency that have been introduced for both homes and businesses, such as collecting and harvesting rainwater for reuse.

Finally, reducing traffic congestion is an important aspect of achieving sustainability because it reduces air pollution. This can be achieved by encouraging residents to switch from using their cars and use more public transport and cycles. In Freiburg, there is an extensive tram network which is cheap and convenient and over 400 km of cycle paths.

All of these are important aspects of urban sustainability but in my opinion improving the integrated transport facilities make the biggest contribution because they reduce overall levels of air pollution and also contribute to an improving economy and impact socially as people's quality of life improves.

4.1 Bristol is a major city in the UK and is internationally important because its key universities attract many international students. It has a number of key global industries located in or near the city such as aerospace, digital and media that provide international links and considerable employment. Finally, it has an international airport which provide flights to Europe and the USA.

4.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Bristol is a city that has seen significant urban changes that have brought significant economic opportunities. There have been improvements in how accessible Bristol is, with better rail, road, and air links. There has also been considerable investment in redevelopment schemes in the city centre. Both of these urban changes have meant that there is lots of employment growth in Bristol. Bristol is now home to a great number of high tech and creative firms and 30% of jobs are now in the financial sector. Employment is also increasing in the range of cultural and leisure venues that are part of the ongoing redevelopment of the city, such as in Bristol's Harbourside and Cabot Circus.*

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Chapter 27

All exemplar answers given are worth full marks.

1.1 China

1.2 As GNI and HDI increase, birth rate decreases. For example, Japan has a GNI of 41690 and HDI of 0.919 and a birth rate of 7.32. Bangladesh has a GNI of 1940 and a birth rate of 18.13. This is a negative correlation.

1.3 One reason for the difference in birth rate could be differing access to health care which means there is more access to contraception. A second reason could be better education and status of women which means they are more likely to stay in education and pursue a career.

1.4 This question is level-marked:

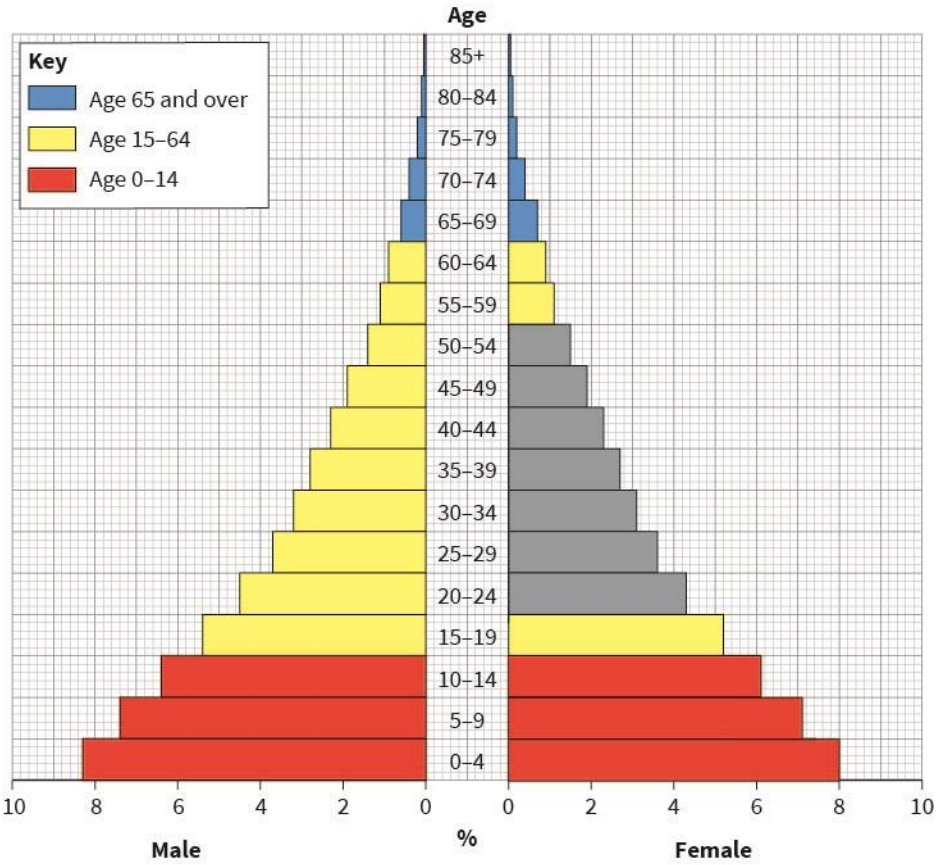
Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The birth rate is a better measure of development because there is a clearer link between improving levels of development and declining birth rates. This is because birth rates will drop when economic development allows for investment in education and for the status of women to improve. The death rate has a less clear link to economic development because in high income countries the death rate can increase because of the ageing population and it is also still very high in the poorest LIC countries because rates of infant mortality are still very high.*

1.5 Quality of life means the wide range of factors that contribute to a person's overall wellbeing, such as happiness, rights, good health and freedom in addition to access to money and possessions.

1.6 The Human Development Index (HDI) is widely used because it is a social indicator made up of three different variables – life expectancy, number of years of education and GNI per head. Because it uses a wider range of variables, it will give a better indication of how well people are benefitting from a country's economic growth.

2.1 The population pyramid should be completed as below. Shading is not required.



2.2 The colour coding on the population pyramid highlights the economically active in the population who are the working age people between the ages of 15-64. These 'support' the young dependents shaded in red and the elderly dependents shaded in blue who are above or below working age.

2.3 Any answer from the following age groups: 0-4, 5–9,10–14, 15–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54.

2.4 Males outweigh females in the 20–24 age group because of high rates of migration into Nigeria as migrants are more likely to be younger males.

2.5 The shape of the pyramid suggest that Nigeria is becoming more developed (NEE) but is not an HIC.

2.6 The pyramid could become wider at the top age groups (65+) and narrower at the bottom age groups (0–14).

2.7 The pyramid could become wider at the 65+ age groups as life expectancy improves due to advances in medical care and better standards of living and narrower in the younger age groups as birth rates drop due to the improving status of women.

2.8 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Using colour coded population pyramids is a useful technique in comparing levels of development because it clearly shows you differences in the different age groups. If the pyramid is wide in the lower age groups, it suggests that the birth rate is high which can indicate a lower status of women. Wide bars in the older age groups indicate an increasing life expectancy, which can show that there have been improvements in healthcare and standards of living in a country. Shorter bars can show higher death rates, which can indicate war or famine and in turn can give clues about the level of development in that country.*

3.1 A: A top-heavy pyramid with an ageing population – especially for females. Life expectancy is steadily increasing especially for females who are living significantly longer than men due to a healthy diet and a better quality of life.

B: Each age group getting smaller over time that shows a declining birth rate that is linked to improving levels of economic development, improved status of women and the age at which people get married and have their first child getting later.

3.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary

Level	Marks	Description
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *The Demographic Transition Model (DTM) shows how the demographic structure of a country will change over time as it moves between different stages of economic development. It shows how the birth and death rates change and the impact that these changes have on the overall population. As such, it can be a useful model for investigating a country's level of development.*

On the one hand, it is useful because it shows how in Stage 2, a country's death rate will drop which indicates that there have been improvements in health care and basic sanitation in a country, that shows levels of development have improved. Stage 3 shows that a little later the birth rates will begin to drop – again showing improvements in factors such as access to contraception and improving status for women, resulting in later marriages and smaller family sizes.

On the other hand, the Demographic Transition Model ignores the important variable of migration that also has a considerable impact on the population of a country. Levels of immigration in a country tend to increase as a country gets more economically developed, Arguably, this would have a definite impact on the populations of countries in Stages 3, 4 and 5. A further reason why the DTM may not be seen as completely accurate is that it is a little outdated and we are less sure about Stage 5 of the model. Death rates could be increasing as a country that has the most economically developed stages perhaps due to diseases of affluence increase such as heart disease and dementia.

In conclusion, the Demographic Transition Model provides a useful starting point for linking population change with economic development, but it is not without criticism and follows a pathway that western countries such as the UK followed.

4.1 Infant mortality is the number of babies that die before their first birthday (per 1000 people).

4.2 Diseases of affluence are diseases that becoming more common in countries with a high level of economic development where there is an ageing population. Some examples of diseases of affluence are dementia, cancer and heart disease.

4.3 You would expect to find newly emerging economies (NEEs) mostly in Stage 3 of the Demographic Transition Model. This is because in this stage you will still have a decreasing death rate due to the improvements that have been made earlier in basic sanitation, health care and immunisations. In Stage 3, you also start to see the decline in birth rates due to the improved status of women and better access to birth control.

4.4 A declining birth rate is a good indicator of both economic and social development because when there is economic development there will be better investment in health care which will therefore mean there is better access to birth control and reduced infant mortality rates; both of which reduce the birth rate. Improved social development will mean that women's rights improve which then results in better education and careers for women, later marriage, and therefore lower birth rates.

4.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *A country in Stage 5 of the Demographic Transition Model will be in a situation where the birth rate drops below the death rate. The consequences of this will be an ageing population. Economically this can cause a problem because the ratio of working age to non-working age people in the population will increase, resulting in a high dependency ratio. Socially, there will be pressure to provide the care and support that is required by the ageing population. A response to the issue of an ageing population is to increase the retirement age so that more people are working and paying tax for longer.*

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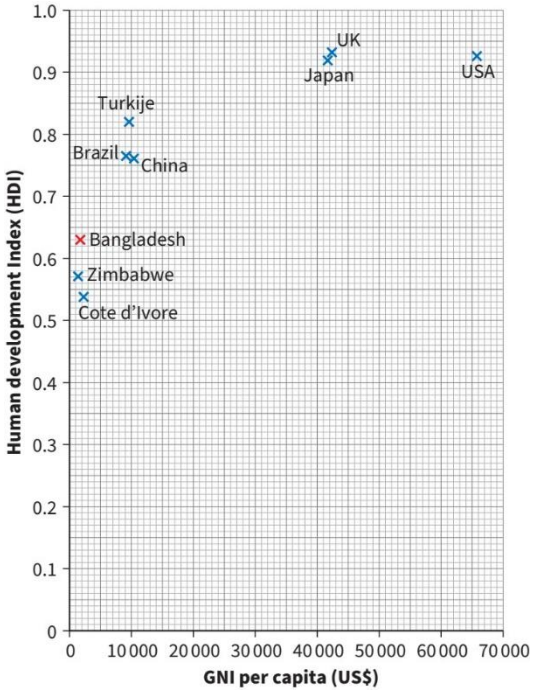
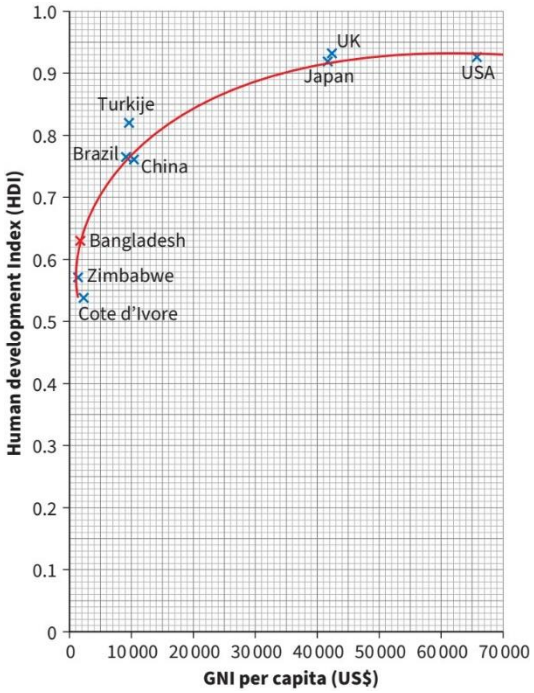
Chapter 28

All exemplar answers given are worth full marks.

1.1 The scattergraph should be completed as below:



1.2 The best fit line should be added as below:



1.3 There is a positive correlation – as GNI increases, so does the HDI. The HDI of the HIC countries such as UK, Japan and especially the USA is not much higher relative to such high GNI. Relatively smaller increases in GNI are resulting in larger increases in HDI such as shows for China, Turkey, and Brazil. These are NEE countries.

1.4 The difference in causes of death between HIC and LIC countries are that in LIC countries the main causes of death are due to infectious diseases such as HIV/Aids, tuberculosis and malaria. Many of these diseases can be linked to poor sanitation and water sewage systems.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *There are a number of physical or natural causes of uneven development. For example, being landlocked is a factor that makes it difficult for countries to develop because they are surrounded by other countries on all sides. It is more difficult for a landlocked country to develop sea trading routes. Secondly, frequency of natural disasters such as flooding, drought, tropical storms, earthquakes, and volcanoes make development difficult. There are also some climate-related diseases that affect tropical areas in Asia, South America particularly. Finally, harsh relief is another factor that limits development because it is hard to build infrastructure.*

1.6 Weather and climate can impact economic development by making climate related diseases more likely to occur. Also, when weather is extreme for example during floods or droughts, it can slow development.

1.7 An economic migrant is someone who moves voluntarily to seek a better life and a refugee is someone who migrates because they don't have any choice and are forced to leave their home due to conflict or a natural disaster.

1.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Both physical factors and historical factors are important in creating uneven development around the world. Firstly, being landlocked is a factor that makes it difficult for countries to develop they are surrounded by other countries on all sides. As a result, it is more difficult to develop sea trading routes which limits economic development. This happens for many Africa countries. Secondly, frequency of natural or weather-related conditions such as flooding, drought, tropical storms or earthquakes and volcanoes make development difficult because countries are frequently trying to recover from hazards rather than investing in the development of the country. There are also some climate related diseases that affect tropical areas in Asia, South America and Asia such as malaria. Finally, harsh relief is another factor that limits development because it is hard to build infrastructure.*

A key historical cause of uneven development is the exploitative process of colonialism which saw large parts of Africa, Asia and South America divided up between European powers such as the UK, Spain and France. When some of these countries fought for their independence, it started the difficult process of putting in place new governments. This sometimes resulted in power struggles and civil wars, which has held back development considerably.

2.1 You would expect a country in Stage 4 of the Demographic Transition Model (DTM) to have a much taller pyramid with wider bars in the older age groups. You would also expect it to have a narrower base where each bar is becoming narrower.

2.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *You would expect this because as a country becomes more developed, the life expectancy would increase so there would be more people living into old age. This is in part due to improved healthcare and sanitation. You would expect a narrower base to the pyramid because the birth rate would be steadily declining. This may be because the status of women would improve as a country becomes more developed. As a result, the age of marriage and birth of a first baby would be later. The improvements in healthcare would also mean that birth control would be easily available to people, so that family sizes could be limited.*

Oxford Revise | Geography | Answers

Chapter 29

All exemplar answers given are worth full marks.

1.1 B

1.2 The multiplier effect is the long-term positive benefit that investment and job creation can bring to the economy. When a factory provides jobs for people, these workers will then pay tax to the government that can be used to invest in infrastructure, schools and services such as water. In addition, the increased wealth in the area will attract further investments to the area. These include shops, community facilities and smaller supply industries, for example factories. All of these provide job opportunities.

1.3 Negative impacts of tourism on an LIC could include environmental degradation such as footpath erosion. Another is the widening gap between rich and poor communities as only some areas benefit from the growth in tourism.

1.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Fair trade can help to reduce the development gap by improving the quality of life for farmers. The farmers join cooperatives to work with a larger group and earn extra income and a guaranteed income from the fair trade premium. They can use this extra income to improve their living standards and pay for their children to attend school, which, in turn, will help them access employment. Part of the fair trade income is also invested in local community development projects and initiatives, such as building local health centres that help development in the longer term.*

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Microfinance loans are small-scale loans that are given directly to families to start up small business that help them become self-sufficient. They are good because they have low or no interest rates so are low risk and can be given to people who would not normally be given credit. As businesses develop, they can provide employment opportunities for the community. Intermediate technology is also important for reducing the development gap. Like microfinance, it is small scale and appropriate for the actual needs of local communities. It works with the skills and knowledge of the local people so provides a suitable source of employment.*

1.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Long term aid can be used to help close the development gap. It can be given in the form of money such as grants or loans, skilled workers, or technology such as tools or machinery. Aid is most effective when it is sustainable and helps to build resilience and independence such as wells to provide water for community food production, tools to improve agriculture, health centres or roads. When it is suitable, it can bring long term benefits to regions and improve people's general quality of life.*

Goat aid is a good example of an aid project that helps to reduce the development gap. NGOs such as Oxfam use donated money to buy families goats which produce milk, butter and meat that can be sold to enable families to earn money which can be used to pay for children's education. Manure from the goats can be used to help in farming and goats can be bred easily and then kid goats can be sold or given to other members of the community. All these benefits will help raise the level of development in a community in a multitude of ways.

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Both industrial development and tourism are tools that can be used by LICs to reduce the development gap. Industrial development involves the building up of factories and industry in an area. It provides employment and generates higher incomes for local workers and so improves their quality of life. Factories often produce manufactured goods that can be exported, which brings important sources of foreign income into the country that contributes to a country's GDP. Income is also generated in supporting linked industries. The additional income for the population and the industries will also increase the amount of taxes being paid to the government.*

This allows there to be investment in housing, education and infrastructure which will help the attraction of future industries into the area. It also means that the population becomes better educated and healthier. NEE such as Brazil and China have used industrial development to help close the development gap in their countries. Foreign investment in Africa has meant that industrial development is becoming increasingly important there too.

Tourism is an alternative pathway to reducing the development gap and may be more appropriate in countries that have natural appeal to tourists, for example Jamaica in the Caribbean. Jobs are created in directly linked sectors such as in entertainment and accommodation, which in turn support businesses such as construction and transport. It is estimated that 200 000 jobs have been created in Jamaica through tourism, providing income for the local people. In a similar way to the way that industrial development can trigger the multiplier effect, allowing wider investment in infrastructure, health care and education will help improve the level of development in the whole country, in the long term. Tourism is a luxury however, and relying on this industry too much can make a country vulnerable in times of economic recession, or if there is a global event such as COVID.

In conclusion, although both are open to the criticism that local resources and people are being exploited, both industrial development and tourism can be seen as effective ways to reduce the development gap. This is because both create employment, and both trigger the multiplier effect. However industrial development may be less vulnerable to global events than tourism, so provides a better, longer-term strategy.

2.1 D

2.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Tourism can be used by some countries to reduce the development gap, especially when they have features that would appeal to tourists, for example, pleasant climates, beautiful landscapes and abundant wildlife. A good example of this would be Jamaica in the Caribbean. When the tourism industry is developed, there will be direct and indirect jobs created through hotels, transport, and tourist attractions, but will also create linked employment opportunities in agriculture and construction. In Jamaica, it is*

estimated that 200 000 jobs have been created through the development of tourism. When tourists spend money in the country, it adds to the economy, which can improve the GDP of the country. In 2019, 35% of Jamaica's GDP came from tourism.

In addition to developing the tourism industry, there will be significant investment in the basic infrastructure of the country, for example roads, public transport, sanitation, and water systems. In Jamaica, the new port that was built to support tourism has also helped other industries. Tourism can help to generate the multiplier effect in a country, as increased wages, provided by both direct and indirect jobs, will increase the amount of money spent in the local economy. It will also increase the amount of tax available to the government, which will enable long-term investment in infrastructure, education and housing. This will help to reduce the overall development gap.

2.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Debt relief is when international institutions such as the World Bank agree to cancel the debt of a country, so that they don't have to spend all their money attempting to repay the large loans they have taken out in the past. This can happen if the country agrees to meet certain conditions, such as having a stable government with no corruption that can manage its economy well. This means that instead of paying back debts, a country's government can invest in projects that help its long-term development. For example, they can develop industry and infrastructure or invest in projects to help the quality of life of people, such as education and health care improvements.*

2.4 The international Fairtrade movement is a global organisation that promotes fair trade. It sets the standards for fair trade with poorer countries and ensures that there is more environmental regulation, improved and safer working conditions, and a guaranteed investment in local development projects. The Fairtrade movement ensures these standards across the world and ensures that farms meet these standards before they can be awarded the fair trade logo.

3.1 A key economic factor that contributes to uneven development is linked to world trading patterns. Poorer countries have tended to export primary products such as minerals and agricultural products which have not been processed or manufactured into a more valuable product. These are therefore worth less when traded. The manufacturing of these primary products usually happens in richer countries who, as a result, get richer. Richer nations also protect their own trade with the use of quotas and subsidies.

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *There are several disparities between health in LICs and HICs often linked to a lack of access to doctors and health care. In LICs, there is much higher infant and child mortality rate with 4 in every 10 deaths in LICs being children. This is compared to only 1 in 100 in NEEs. As people live longer in HICs 7 in every 10 deaths are amongst people over 70 years old. The causes of death are also very different in LICs and HICs. Diseases linked to poor water supply such as diarrhoea and infectious diseases such as Malaria are still the main causes of death in LICs. In comparison, degenerative diseases of affluence are more common in HICs. These include cancer, heart diseases and dementia, which are linked to lifestyle and longer life expectancies.*

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Chapter 30

All exemplar answers given are worth full marks.

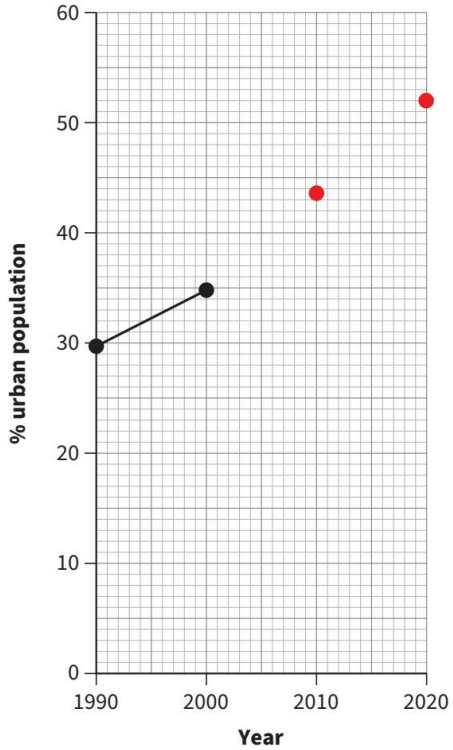
1.1 Lagos

1.2 Jos Plateau

1.3 Physical relief is shown through contour shading, ranging from greens to represent lowland areas to browns and purples to indicate highland areas.

1.4 1: 19 000 000

2.1 The graph should be completed as below. Students may draw lines to connect the points.



2.2 Figure 2 shows that the urban population in Nigeria has increased rapidly. This could be linked to Nigeria's changing industrial structure which has led to a decline in employment in primary industries such as farming and an increase in manufacturing and tertiary employment, both of which tend to be found in or close to urban areas.

2.3 Nigeria is globally important because it is the 15th largest exporter of oil and has the 27th biggest economy in the world. It also contributes a large amount of troops to UN peacekeeping missions.

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2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer*: The manufacturing industry has been growing in importance in Nigeria and in 2020 it accounted for roughly 13% of the country's GDP. This has helped to stimulate economic development by providing jobs for local people. Jobs are also created in linked industries such as in the Niger Delta oil industry, as the oil is used by companies manufacturing plastics and detergents, or such as in companies that make the parts that can then be used to manufacture cars in larger factories in Lagos. As all of these industries grow, more people are employed and are receiving a regular, secure income. This then creates a market for the manufactured products, such as cars and electrical products. The additional tax revenue triggers the multiplier effect, allowing larger-scale investment in education, health care and infrastructure as well as further industrial development.*

2.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	4–6	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–3	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

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3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	● Accurate spelling and punctuation ● Rules of grammar followed ● Effective control of meaning ● Uses wide range of specialist terms
2	● Generally accurate spelling and punctuation ● Most rules of grammar followed ● General control of meaning ● Uses good range of specialist terms
1	● Reasonably accurate spelling and punctuation ● Some rules of grammar followed – errors do not hinder meaning ● Some control of meaning ● Limited use of specialist terms
0	● Writes nothing ● Does not relate to question ● Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *A transnational cooperation is a large company that operates in several countries and has increasingly set up production plants in NEEs and LICs such as Nigeria. They bring many advantages but also some disadvantages.*

About 40 TNCs are located in Nigeria and this number is growing, with most having headquarters in the UK, USA or Europe. They have provided important sources of employment and new skills both directly and indirectly. Shell, one of the largest oil companies, has provided 65 000 direct jobs and Unilever, a company producing household products, currently employs 1 500 people. As around 91% of Shell contracts are given to local Nigerian companies, there are many indirect employment benefits. 250 000 jobs have been created by Shell in related and linked industries. These employment opportunities will trigger the multiplier effect, making major contributions to tax and valuable export revenues, all helping to reduce the development gap and improve the quality of life for the Nigerian population.

There are however some disadvantages associated with TNC investment in NEEs and LICs. Wage levels can be low and sometimes working conditions are poor. This is because many of the best, higher-paid jobs are given to workers in the HIC headquarter countries or people brought in by the TNC. TNCs are also criticised for exploiting resources and not taking care of the environment. Shell has been responsible for a number of large oil spills that have contaminated local water supplies and farming. This has led to resentment in local people and much conflict between local communities and the TNCs. In Nigeria militant groups have frequently disrupted the oil refineries in the Niger Delta.

Overall, TNC investment brings more advantages to NEEs and LICs due to the knock-on and longer-term benefits or the multiplier effect and the growth of the local supply industries and investment in infrastructure. With more careful controls and management some of the more negative environmental and social issues can be reduced, paving the way for a reduction in the overall development gap in countries like Nigeria.

3.1 A transnational cooperation is a large company that operates in several countries. It usually has its headquarters in one country and its production plants in several countries.

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3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *TNCs can bring many advantages to LICs and NEEs. They provide employment and new skills for the local people, which can improve their quality of life. In Nigeria the TNC Shell has created 65 000 direct jobs. Other local linked industries have also benefitted from increased orders. It is estimated that 250 000 jobs were created by Shell in related industries which will contribute even more the GDP of the country and will trigger the multiplier effect as the additional money being spent in the local economy and the resulting tax revenue will allow greater investment in local infrastructure and education.*

3.3 Nigeria has a natural environment that runs in three clear bands across the country. In southern Nigeria there is a band of high temperature and high rainfall that is mainly occupied by forest and crops. In central Nigeria is an upland region that is mainly savanna grassland. In northern Nigeria there is a band of semi-desert.

3.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Nigeria is regionally important because it has one of the fastest growing economies in Africa and in 2014 had Africa's highest GDP. It has the highest farm output of any African nation and the largest number of cattle in the continent. It also has the highest population in Africa.*

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3.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Nigeria is a country in West Africa that is growing in both its global and regional significance. It is important within Africa because it has the highest population and highest GDP. It's economy is also one of the continent's fastest growing both in terms of its manufacturing sector and agriculture. It has the largest number of cattle of all African countries. Culturally, Nigeria is also important because it offers a rich and diverse culture, contributing lots to Africa's music, literature and film industries.*

Globally, Nigeria is also important. It provides 2.5% of the world's oil, which could become increasingly important as world supplies diminish. It is also now becoming an increasingly important economic hub, supporting the spread of foreign investment to the continent of Africa. In terms of sport, Nigeria contributes a large number of players to the top football teams globally. Politically, Nigeria is also important globally; it is the fifth largest contributor to UN peacekeeping missions and also has an important 'voice' representing Africa in global politics and economic decision-making.

Nigeria is therefore vital to Africa. The country has huge potential and could provide a model for other countries in the continent and trigger more development for all. As its population, economy, sports industry and cultural industries grow, its role globally could definitely become more significant.

4.1 Fair trade is a general term referring to any trade that is grounded in the principle of being 'fair'. Fairtrade is an international movement that works to help producers in LICs and NEEs get a fair price for their products and develop environmentally friendly production systems and trading relationships.

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4.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *HICs protect their trade by providing quotas and subsidies to help their manufacturers and producers. Subsidies mean that financial support is given to producers so that their products are cheaper than those produced by poorer countries. Quotas are limits on how much can be imported from other countries. They work by protecting the market share of a product for a country's own producers and manufacturers.*

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Chapter 31

All exemplar answers given are worth full marks.

1.1 The waste is made up of bags of household waste and also tyres and containers that could be from industry.

1.2 As well as the visual pollution, some waste may contain chemical or industrial waste that could pollute water supplies and get into the groundwater. This will be harmful to people and also can damage the ecosystems downstream.

1.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *In Nigeria there are a number of environmental problems. Firstly rapid urban growth in cities such as Lagos and Abuja has led to traffic congestion which in turn leads to air pollution. The speed of urban growth has also led to problems with waste disposal, causing rubbish to build up in the city, which can lead to harmful pollutants reaching water supplies. On top of this industries often dump chemical waste directly into rivers and water supplies. The rapid growth of urban areas has also led to deforestation, resulting in habitat loss for a range of plants and animals. This reduces levels of biodiversity. In total it is thought that 70–80% of Nigeria's forests have been destroyed due to industrial and urban growth.*

1.4 Nigeria has a number of political and economic links. Firstly, it is a member of the African Union. This is an economic planning and peacekeeping group. Due to Nigeria's role in oil production, it is also a member of OPEC. This is a group which aims to control the price of oil around the world. As a former member of the British empire Nigeria is now a member of the Commonwealth. The Commonwealth aims to develop a community that cooperates with each other regarding world issues and supports each other in times of need.

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1.5 Nigeria is an important trading nation. Its main imports include refined oil from the USA and the EU, telephones from China and cars from Brazil. Its main exports include crude oil, natural gas and the raw materials rubber, cocoa, and cotton. Its largest export partners are the EU, India and the USA.

1.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Nigeria has received aid intended to improve the quality of life of poor people. It receives about 4% of the aid that is given to African countries. Most of the aid it receives is from the UK and the USA. Some aid is from the World Bank, who focus on long-term aid projects to help development and improve businesses, and some is form other separate NGOs. An example of an NGO project is Nets for Life. The project distributes anti-mosquito nets to households and educates people on malaria prevention. The UK government has also funded a health and HIV programme that improves health in rural communities.*

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	4–6	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–3	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary

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Level	Marks	Description
	0	No relevant content

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3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	● Accurate spelling and punctuation ● Rules of grammar followed ● Effective control of meaning ● Uses wide range of specialist terms
2	● Generally accurate spelling and punctuation ● Most rules of grammar followed ● General control of meaning ● Uses good range of specialist terms
1	● Reasonably accurate spelling and punctuation ● Some rules of grammar followed – errors do not hinder meaning ● Some control of meaning ● Limited use of specialist terms
0	● Writes nothing ● Does not relate to question ● Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *There has been considerable economic growth in Nigeria in recent years. This has had an impact on the quality of life of the population which in some ways can be seen to be improving. Quality of life is often measured using the human development index. Nigeria's human development index improved steadily between 2005, when it was 0.465, and 2010, when it was 0.485. It improved even more rapidly between 2010 and 2015. This improvement in the HDI is evidenced by improvements in health care, life expectancy, and access to safe drinking water, as well as a large decrease in rates of infant mortality. Furthermore, the improvement in availability of paid jobs in the industrial sector often meant that families had higher disposable incomes and could afford to send children to school. Between 1990 and 2017 the percentage of children attending secondary school rose from 25% to 49%.*

It is therefore clear that economic development has improved quality of life for some groups of Nigerians. It is, however, not all positive. Since 2015 the improvements in Nigeria's HDI have slowed down and almost stagnated. Some indicators of development appear to have got worse such as the percentage of people with access to sanitation facilities. This highlights the serious issue of inequality in Nigeria, with many rural communities struggling to keep pace with urban areas when it comes to providing clean water and basic sanitation.

It is clear therefore that, although Nigeria benefits from its economic growth, there are still problems such as the widening of the gap between the richest and poorest people and the risk of over-reliance on oil.

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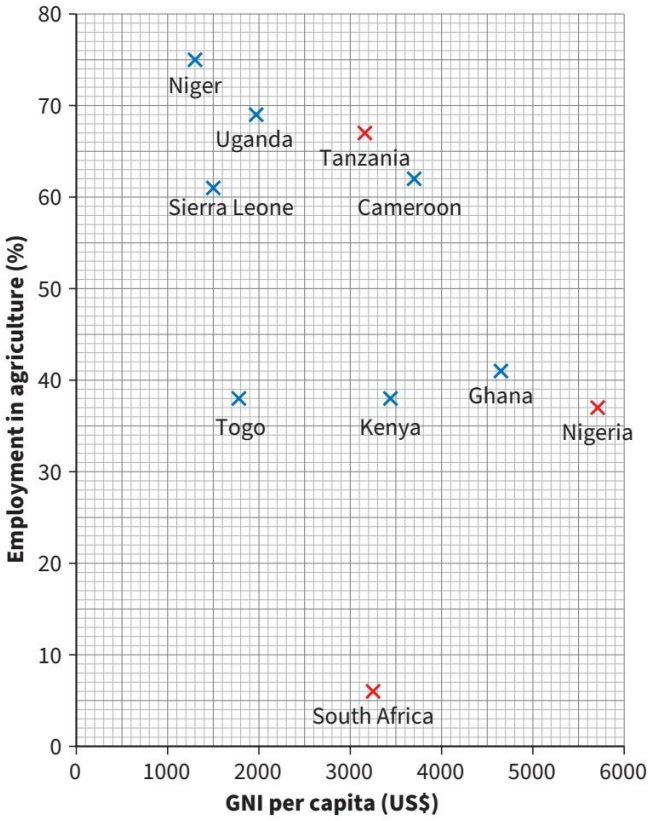
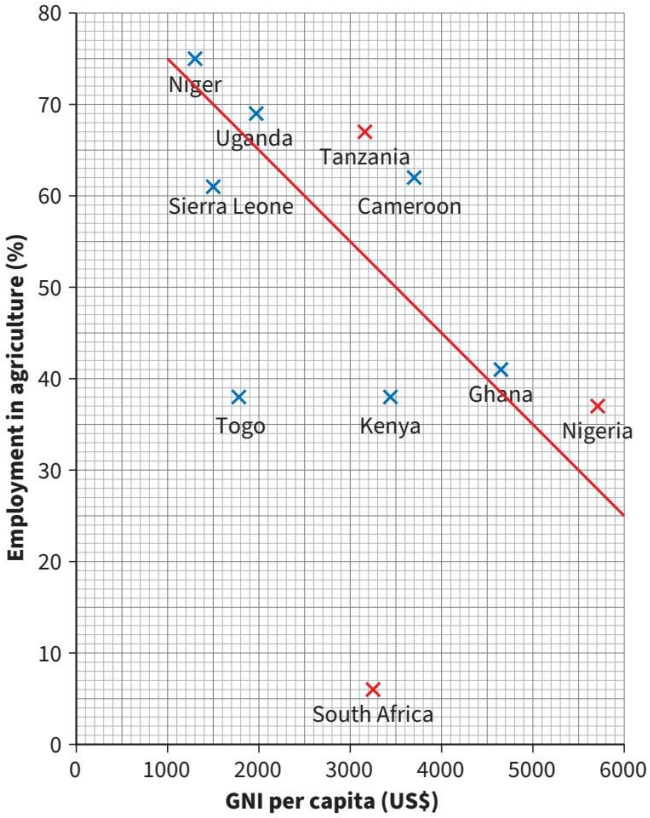
2.1 The scattergraph should be completed as below:



2.2 A trend line should be added as below:



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2.3 South Africa should be circled.

2.4 The relationship between the two is that as GNI increases the percentage of people employed in agriculture decreases. This is a negative correlation.

2.5 This relationship is expected because, as a country becomes increasingly developed, more people will work in the secondary and tertiary sectors. This is firstly because levels of wealth and education improve and secondly because mechanisation means there is less need for workers in agriculture.

2.6 South Africa has a much lower percentage of people working in agriculture than its GNI would suggest. This could be because it has a high amount of people working in other low-paid primary sector jobs such as mining.

2.7 The industrial structure of Nigeria has changed significantly. In 1991 nearly 60% of the population was employed in agriculture but by 2020 this had dropped to approximately 22%. The percentage of people employed in industry remained steady at 10% from 1991 until 2017, but then increased to 25% in 2020. Finally, employment in services has only varied slightly since 1991, ranging from 30–50%. The biggest shift appears to have been from agriculture to industry employment.

2.8 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *There a range of types of international aid that can be given to countries. Firstly, there is emergency or short-term aid that is given as a response to an event such as a war, famine, or natural disaster (e.g. the Haiti earthquake). Another type of aid is developmental aid that is given in order to improve the long-term development of a country by providing safe water, education, or infrastructure. This aid is often given by NGOs, such as Nets for Life in Nigeria, but can also be given bilaterally which means directly from one government to another. This form of aid can also be given by multilateral organisations such as the World Bank. Nigeria was given US$500 million by the World Bank to fund long-term development projects.*

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2.9 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Nigeria has experienced a range of negative environmental impacts due to its recent rapid economic development. Firstly rapid industrial development has been difficult to regulate because it is estimated that there are 10 000 illegal small-scale industries in the country. These industries often let dangerous pollutants and chemicals directly into water supplies, a practice which then harms ecosystems. These industries also let out poisonous gases into the air, which impacts on health and well-being. Nigeria's economic growth has been quite heavily reliant on oil extraction and this has been linked to serious pollution such as the 2008 and 2009 oil spills in Bodo when 11 million tonnes of crude oil spilt into the Niger Delta.*

Rapid urban growth often occurs alongside industrial development and results in a number of environmental problems such as traffic congestion, waste and rubbish dumping, and increasing rates of deforestation as illegal settlements spread. Deforestation has destroyed habitats; it is estimated that the habitats for 500 types of plants and animals such as Cheetahs and Giraffes have disappeared.

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3.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Transnational cooperations can bring disadvantages to the countries they set up in. Although they offer employment, it is often the case that the highly skilled or best-paid jobs are kept in the HIC country or that workers from the HIC are brought in to do those jobs. This means that the local community get the low-paid and low-skilled work and much of the money earned leaves the LIC country. At times TNCs are criticised for allowing poor, unregulated working conditions where laws are not followed some workers are underage. Any grants and subsidies that are used to attract the TNC cost the LIC country money that would be better spent on investing in local industries rather than in an HIC owned company.*

3.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	4–6	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–3	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

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3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	● Accurate spelling and punctuation ● Rules of grammar followed ● Effective control of meaning ● Uses wide range of specialist terms
2	● Generally accurate spelling and punctuation ● Most rules of grammar followed ● General control of meaning ● Uses good range of specialist terms
1	● Reasonably accurate spelling and punctuation ● Some rules of grammar followed – errors do not hinder meaning ● Some control of meaning ● Limited use of specialist terms
0	● Writes nothing ● Does not relate to question ● Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *A transnational cooperation is a large company that operates in several countries and has increasingly set up production plants in NEEs and LICs such as Nigeria. They bring many advantages but also some disadvantages.*

About 40 TNCs are located in Nigeria and this number is growing. Most of these TNCs have headquarters in the UK, USA or Europe. They have provided important sources of employment and skills development, both directly and indirectly. Shell, one of the largest oil companies, has provided 65 000 direct jobs and Unilever, a company producing household products, currently employs 1 500 people. As around 91% of Shell contracts are given to local Nigerian companies, there are many indirect employment benefits. 250 000 jobs have been created by Shell in related and linked industries. These employment opportunities will trigger the multiplier effect, making major contributions to tax and valuable export revenues, all helping to reduce the development gap and improve the quality of life for the Nigerian population.

There are however some disadvantages associated with TNC investment in NEEs and LICs. Wages can be low and sometimes working conditions are poor. This is because many of the best, higher-paid jobs are given to workers in the HIC headquarter countries or people brought in by the TNC. TNCs are also criticised for exploiting resources and not taking care of the environment. Shell has been responsible for a number of large oil spills that have contaminated local water supplies and farming. This has led to resentment amongst local people and much conflict between local communities and the TNCs. In Nigeria, militant groups have frequently disrupted the oil refineries in the Niger Delta.

It can therefore be seen that there are both positives and negatives associated with attracting TNCs to countries such as Nigeria. For some people in the country, there will be employment opportunities, either in the actual factory or in one of the linked industries. For others, such as those who lived and worked in the Niger Delta at the time of the 2008 oil spills, quality of life may be threatened.

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Chapter 32

All exemplar answers given are worth full marks.

1.1 Employment in the primary sector has steadily dropped from around 21% in 1841 to 1–2% in 2011.

1.2 From 1841 to 1911, employment in the tertiary sector fluctuated between roughly 30% and 40. By 1931, it had increased to 50%. After a slight decline, it then increased steadily from 1951 until it reached 79% in 2011.

1.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised, and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Primary employment has been steadily declining in the UK since 1841. Between 1841 and 2011, the percentage of people employed in the sector has decreased from 21% to only 1–2%. This is firstly due to mechanisation, which resulted in a lower demand for workers, and secondly due to the ability to trade food products and raw materials from overseas. There seems to be a link between the rise of tertiary employment and the decline of secondary employment in the UK. Secondary employment was reasonably steady between 1841 and 1961, sitting at around 35–40%. There was a sudden decrease after this point until numbers reached about 10% in 2011. This decline is due to deindustrialization and the closure of many factories as they moved overseas. Tertiary employment increased during the same years, with numbers rising from 45% in 1951 to 80% in 2011. This happened because mechanisation lowered the demand for workers in industry and led to the closure of many industries. An improved level of wealth and education also made tertiary jobs possible. Quaternary jobs only became available in the UK from 1981 onwards as scientific breakthroughs made this type of employment possible.*

1.4 Deindustrialisation is the decline of heavy secondary industry, the closure of factories in areas where they once dominated and the growth of tertiary industries.

1.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Deindustrialisation happened in the UK for a number of reasons. In general there was a shift towards mechanization, where machines replaced people in the manufacturing process such as in the car industry where robots took over many of the roles on the production lines. This meant that employment in industry declined. In addition, as the UK was one of the first countries to industrialise, machinery and buildings became outdated but did not receive investment. It became cheaper and easier to produce the products overseas in countries like China, Malaysia, and Indonesia where labour costs were lower and buildings were more modern with the latest technology.*

1.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The term post-industrial economy refers to an economy where manufacturing has declined and has been replaced by tertiary and quaternary jobs. There is lots of evidence to suggest that the UK now has a post-industrial economy. Firstly, there has been a consistent and steady decline in employment in the primary and secondary sectors of the economy in recent decades. Secondary employment fell from around 35% in 1961 to 10% in 2011. Both tertiary and quaternary levels of employment rose. Tertiary rose from around 50% to 80% between 1961 and 2011 and quaternary first became evident around 1980 and reached around 12% by 2011. Secondly, the industrial landscape has changed significantly in the UK. The factories that were used for heavy industry, once common in and around cities in the north of the UK, have often become derelict and abandoned and have been replaced by science parks. Science parks are areas, often close to universities, that provide a site for modern scientific and knowledge-based businesses and their support businesses. These science parks host some of the quaternary and tertiary jobs that the UK has shifted towards. Research now employs around 250 000 people in the UK and the service sector, including financial services, is one of the fastest-growing sectors and contributes to over 80% of the UK's GDP.*

2.1 The quaternary sector is the newest sector of employment and is based on research and development, information technology, and the knowledge economy.

2.2 A post-industrial economy is where the manufacturing industry has declined and has been replaced by the growth of the service sector and the developing quaternary sector.

2.3 Science and business parks are both purpose-built sites that attract businesses. Science parks tend to focus on more scientific, knowledge-based industries, such as research, while business parks have a wider range of, often service focussed, businesses. Science parks have more links to universities than business parks in order to employ the highly skilled graduates into research roles.

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The use of IT has been one of the main factors in the UK's move to a post-industrial economy. Many new businesses are directly involved with developing IT by designing and manufacturing new hardware and software. Over 1.3 million people in the UK are employed directly in these types of jobs and the UK is one of the world's leading digital economies. IT has also enabled the rapid development of research as people are now able to communicate with others instantly using the internet. Computers also allow large amounts of data to be stored which is often an important part of the research process.*

3.1 Features of the Cambridge Science Park could include the strong links with Cambridge University; a focus on high-tech, quaternary industries; close to good transport links; in an area with a very pleasant environment.

Accept other similar suggestions.

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Science parks provide an opportunity for regional economic growth because they attract lots of businesses that offer highly skilled employment. This keeps skilled workers in the region. Figure 3 also suggests that science parks attract other linked businesses to the area which can benefit from shared ideas and networks as well as sharing infrastructure and costs. Once the science parks and other businesses are attracted, the multiplier effect will bring wider benefits, making the area even more attractive to future businesses and establishing the area as a regional hub for research and innovation. The Cambridge Science Park is very good example of this. It creates at least £37 billion of revenue per year and provides around 7000 jobs in 300 companies.*

3.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Science parks provide clear evidence of the changing nature of the UK economy. The factories that were once used for heavy industry, once common in and around cities in the north of the UK, have often become derelict and abandoned and have been replaced by science parks. Science parks are areas, often close to universities, that provide a site for modern scientific and knowledge-based businesses and their support businesses. These science parks host some of the quaternary and tertiary jobs that the UK has shifted towards and it is estimated that the research roles and support roles in financial services and marketing now provide over 75 000 jobs in the UK, making them very significant in the new post-industrial economy of the future. The University of Southampton Science Park is a good example. Developed in 1986, it has now expanded to include over 100 science and innovation businesses such as those developing technology in fibreoptics and spectrometers. There are over 100 science parks similar to the Southampton Science Park in the UK and together they play a very significant role in the future of the economy.*

3.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Modern industry can be made more sustainable in order to reduce the negative environmental impacts. Strong regulations, environmental targets, and fines make pollution incidents punishable and give industries a strong incentive to meet standards of air and water quality. Regulations also exist to ensure that industries restore their surrounding environments, often through providing new habitats for wildlife and restoring the landscape to its former state or better. Modern technology can now help to reduce harmful emissions and reduce gases such as sulphur dioxide that are produced by modern power stations and industry.*

4.1 D

4.2 Some forms of international aid can have problems. In Nigeria, aid given through the government does not always reach communities in need due to government corruption and diversion of the aid money to other purposes. In the case of Nigeria, it is claimed that some aid money has not be given to communities but has been used to build up the military. Aid that gives the donors power and influence over decisions in the country is also not good because it can be used to help the donor and their business interests rather than the communities in need.

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Chapter 33

All exemplar answers given are worth full marks.

1.1 The UK port industry is the largest in Europe because the UK has the longest coastline and a very long trading history.

1.2 The UK aviation industry is very significant to the UK economy because it establishes strong links for the UK globally. Air travel links the UK with 114 other countries. As such a large industry, aviation also creates an estimated 1 million jobs and contributes £22 billion to the UK's GDP.

1.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Improvements to road transport can affect both employment and regional economic growth. Due to this the UK government has invested large sums of money into improving the road network and also the condition of roads. Figure 1 shows the change of the M25 into a smart motorway. This is happening to lots of motorways and involves using technology to manage congestion on busy routes around the major cities. Additional lanes have also been added to many existing motorways and main roads, again in an attempt to reduce congestion. An example of road development would be the improvements made to the A303, the main route to the south-west of England, which has suffered from lots of congestion. Key sections of the road are turned into a dual carriageway and it will be known as a 'super highway'. All of these improvements and upgrades create considerable employment which boosts the economy of the country. In addition it attempts to 'level up' and attract some businesses and employment out of London and the south-east to other regions as investment is more likely when these regions are better connected to other parts of the UK.*

1.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Rural depopulation is when there is a population decline in particular rural areas. This is often due to outmigration but also due to declining birth rates in an area where there is an ageing population. The Outer Hebrides, a chain of islands off the coast of Scotland, have seen a 50% decline in their population since 1901.*

There are a number of social and economic impacts of significant depopulation. Firstly, socially, there will be a loss of some basic services such as schools, other facilities for younger people, and post offices. The loss of these services will leave people feeling isolated – especially those less likely to be able to travel to the mainland.

Economically, many of the traditional primary industries such as sheep farming and deep sea fishing have declined in recent years and are in themselves less attractive as careers for younger people. This means that younger people have limited options but to move away, meaning that there are fewer and fewer people of working age in the area to support the increasingly ageing population.

2.1 The UK north-south divide is the real or imagined economic and cultural divide between the south of England, including London and the south east of England, and the north and rest of the UK. The divide exists, firstly, due to deindustrialisation impacting regions in the north of England more significantly, since these regions had most of the heavy industry and factories, and, secondly, due to recent development of the service sector around London and the south east.

2.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised, and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Two strategies that can be used to resolve regional differences are developing enterprise zones and local enterprise partnerships. Enterprise zones are areas in which the government offers financial incentives for businesses, such as a reduction in business rates, grants for new machinery, and simpler planning rules. All of these incentives aim to attract businesses to areas where there is high unemployment. Local enterprise partnerships have the similar aim of providing more jobs and stimulating local economies. They do this by setting up voluntary partnerships between businesses and the local councils to identify the needs of the businesses and then acting on these by making transport and infrastructure investments.*

2.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Transport improvements are key to improving the UK economy and 'levelling up' between the economically more-successful London and the south-east region and the rest of the UK. Transport is key to a growing economy. There are considerable employment opportunities in the actual construction of new transport, including improvements in roads, railways, air transport and ports of the UK.*

There has been considerable investment in rail travel in the UK which is a good way of providing links between regions and avoiding the congestion of the roads. HS2 is a high-speed rail line that aims to connect London with Birmingham and possibly cities further north. Although the development has been controversial from the start due to its cost, it is hoped it will pull investment and economic growth towards Birmingham.

Air travel is also important to boosting the UK economy as it provides important global links. The aviation sector provides around 300 000 jobs and contributes 3.6% to the UK's GDP. Furthermore, 2 million tonnes of freight pass through UK airports each year. With air travel recognised as vitally important to wealth creation in the UK, a new runway was proposed for Heathrow airport. It was argued that this alone would generate £147 billion over 50 years and generate 70 000 new jobs by 2050. As with HS2, this is very controversial, especially amongst those living close to airports, but is considered to be vital for the economic development of the region.

2.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Population growth is happening in rural areas that are close to larger, thriving towns and cities. An example of this would be south Cambridgeshire, the area surrounding the city of Cambridge, which is growing mainly due to immigration from Cambridge itself but also Eastern Europe. There are a number of social and economic impacts of this population growth on rural areas. Firstly, socially, there will be a loss of some basic services, such as public transport and post offices, as people continue to use the facilities in Cambridge when they are working there. This is made worse in south Cambridgeshire as there is now 80% car ownership, putting a strain on less frequently used public transport. The loss of these services will leave people feeling isolated, especially those less able to travel to the towns. Another social impact is that new housing developments and additional people in rural villages can break down the traditional rural communities.*

Economically, the cost of housing increases in rural areas as these areas become more desirable, meaning there is limited affordable housing for local people. Many of the traditional primary industries such as

farming have declined in recent years as farmers increasingly sell their land for new housing developments. However, there will be additional employment in construction and house building.

3.1 The new Cross rail line connects Reading with East London and improves journey times across London. A second development is the electrification of the Trans Pennine rail network between Manchester and York that will reduce journey times significantly. A final development is HS2 which is a high-speed train line that will link London and Birmingham and possibly other cities in the north of England.

3.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Ports have always been important to the UK economy because of the long history of trading and the long coastline around the UK. The port industry in the UK is now the largest in Europe and caters for freight and goods and services through special designs for containerisation which is vital for UK trading. Felixstowe is the largest container port in the UK, handling 2 million containers per year. Liverpool2 is the development of a new deep-water container port that will create 5 000 new jobs and boost the north west's regional economy by attracting trade. There is also a large volume of domestic passengers that pass through a number of ports such as Dover. These ports employ around 120 000 people.*

4.1 Large-scale industry can negatively impact on the environment by causing air and water pollution. Large-scale industries also dispose of waste in unsustainable ways, such as into landfill, which can release poisonous toxins into the air and water supply.

4.2 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Governments can force industries to minimise their environmental impacts by imposing strict laws and legislations. Governments can bring in strict targets relating to water quality and air pollution and enforce these targets by imposing heavy fines when the targets are not met or when industrial pollution happens. In addition, planning consent is only given when businesses have clear plans to restore their surrounding areas so that the landscape looks like it did before the industry came to the area.*

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Chapter 34

All exemplar answers given are worth full marks.

1.1 USA, Germany, and Netherlands.

1.2 D

1.3 The UK has many cultural links with the wider world. Lots of UK films and television series are watched in other countries. Many UK musicians are well known on a global scale.

1.4 The main trade link for the UK is with the European Union. The USA is the UK's biggest single trading partner followed by China.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The UK has a number of important transport links with the rest of the world. Heathrow in London and is one of the biggest airports in the world. It is an important transport hub where people transfer between flights from Europe and the rest of the world. There are a large number of ferry routes running between the UK and Europe, with many boats leaving from Dover and Portsmouth. Southampton is an important port for ocean liners which take passengers on worldwide cruises. There is also the Channel Tunnel that links the UK with France for both rail and car passengers.*

1.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary

Level	Marks	Description
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The UK was a member of the European Union between 1973 and 2020 and therefore is still influenced by decisions and events that happened during this time such as the EU financial support given to farmers, fisherman, and economically disadvantaged regions. The UK also benefits from its links with the European Union because it is still, even after the Brexit referendum in 2016, the biggest trading partner for the country. This means that there are very important economic links with the EU which contribute significantly to the GDP of the country. Although the UK is no longer bound by EU legislation, many established EU practices and standards are still used in the UK because they are seen as beneficial.*

The UK also has strong links with the Commonwealth which is an organisation made up of countries that were once British colonies. The aim of the Commonwealth today to foster a strong community and maintain sporting and cultural links. Advice is given to nations on important issues where there is a common interest such as trade and social and economic development.

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	4–6	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–3	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	● Accurate spelling and punctuation ● Rules of grammar followed ● Effective control of meaning ● Uses wide range of specialist terms
2	● Generally accurate spelling and punctuation ● Most rules of grammar followed ● General control of meaning ● Uses good range of specialist terms
1	● Reasonably accurate spelling and punctuation ● Some rules of grammar followed – errors do not hinder meaning ● Some control of meaning ● Limited use of specialist terms
0	● Writes nothing ● Does not relate to question ● Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *The UK was once one of the key superpowers due to its industrial and trading power and its colonial empires throughout Asia, Africa, and the Americas. It is debatable whether the country has been able to maintain its superpower position since the decline of its Empire and the shift of industry away due to globalisation.*

On the one hand, deindustrialisation has impacted the UK's position in the world economy significantly. The UK used to be one of the most powerful nations at the forefront of the industrial revolutions but now production in many industries take place in NEEs and LICs. In addition, the UK's global influence has reduced now that it does not have direct control over the governments in all of its former colonies.

However, it is clear that, although the nature of the UK's power has shifted, it still maintains a position of importance globally. It is still an influential member of global organisations responsible for controlling the world economy, such as the G8, NATO and the UN security council, which gives it an important role in decision making. The UK also still contributes a lot to world trade, with its main trading partner being the EU, followed by the USA and China. As a nation it is a hub for both transport and electronic communication, with Heathrow being one of the busiest airports in the world and many global submarine cables passing through. It is also a global hub for the finance industry, which is a growing sector of the world economy and now contributes about 10% of UK GDP.

Perhaps most significant is the cultural influence the UK still maintains globally. Although economically its global position has shifted, it is still viewed as a tolerant, open, and law-abiding society. Due to dominance of the English language, the UK's television, film, music, and media outputs are consumed globally and the growing importance of these sectors in the world economy helps maintain the country's significance..

In conclusion, although its economic power and contribution has declined in terms of traditional industry, the global shift towards media, finance, and services has helped the UK adapt and maintain its power.

2.1 The European Union is a trading group of European nations that has steadily grown since it began. It now has 28 member countries where there is some centralised political and economic decision making as well as trade links.

2.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The UK has important roles in the wider world. It has important global trading links and is a member of many global organisations such as the G8, NATO, and the UN security council which gives it a significance in global decision making. In terms of trade, the UK still has significant links with the EU, even after the 2016 Brexit referendum, as well as wit the USA and China. Since Brexit, the UK is seeking to establish other worldwide trading links. The UK also has important transport links with the world via many ferry ports. Most ports link primarily with Europe but Southampton is a hub for worldwide cruises. Furthermore, Heathrow is one of the busiest airports in the world and in general more than 750 000 worldwide flights take off from the UK each year. The UK is also an important hub for the global submarine cable network that supports worldwide access to the internet, especially linking communication with the USA.*

Finally, the UK's rich cultural heritage and respected society still mean that it is a well-respected country with global influence. Many aspects of the UK's culture are now spread across the globe. Good examples of this are television shows, such as Doctor Who and Downton Abbey, and many films made in the UK. The UK's culture is seen as accepting and tolerant and has itself been changed by immigration, which has introduced new food, fashion and music to the country.

3.1 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The UK has an economic and cultural divide between the south, including London and the south east, and the north of England. To reduce this divide the government has attempted to introduce 'levelling up' strategies such as the 'Northern Powerhouse'. This strategy attempts to improve the economies of large northern cities, such as Liverpool and Manchester, through developing infrastructure and transport. In addition, the government has established enterprise zones and local enterprise partnerships in an attempt to attract businesses and employment to areas where this is limited. Enterprise zones offer financial incentives to new businesses, such as reduced business rates, grants to purchase machinery, and more-relaxed planning regulations to make the building of new industries easier. Local enterprise partnerships establish relationships between businesses and local authorities.*

3.2 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Rural areas in the UK have seen differing impacts on their populations depending on location and proximity to towns, cities, and the economic hubs of the country. On the one hand, the Scottish*

Highlands have experienced a 50% reduction in population, mostly due to outmigration. On the other hand, south Cambridgeshire is a rural area that has seen recent population growth due to inmigration from Eastern Europe and the city of Cambridge. The economic impacts of these population changes will vary in both areas.

In the Scottish Highlands there will be many economic challenges caused by depopulation. It is difficult to maintain services such as ferries and post offices when populations are low and the only way to do this is through expensive subsidies. The ageing population means that there are fewer young people working in the area paying taxes to support the older people. This has been made worse due to the decline of primary industries, such as farming and fishing, in the area. This decline results in even fewer employment opportunities, making outmigration worse.

In south Cambridgeshire there are some similar trends, even though the population is growing. Farming has declined as more and more land has been given over to house-building. Services are declining as people who commute out of the area, often to the city of Cambridge, use the services near their places of work instead. A key difference between south Cambridgeshire an the Scottish Highlands would be the affordability of housing. As demand for housing increases in south Cambridgeshire, there is less affordable housing for local people.

Oxford Revise | Geography | Answers

Chapter 35

All exemplar answers given are worth full marks.

1.1 C

1.2 Water scarcity is when an area is under severe water stress and water supplies fall below 1000 m^3 per person.

1.3 Areas experiencing physical water scarcity are mostly found in a band around the world approximately 30 degrees north of the equator in Asia, Africa and North America. Large parts of Saudi Arabia, Pakistan, and China are examples of countries that experience significant physical water stress.

1.4 Seasonal produce is food that is grown locally in certain seasons of the year – such as strawberries in summer.

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *UK food miles have increased because the country is becoming less self-sufficient in farming. Around 50% of our food is now imported from overseas. It is also the case that there is now a greater demand for more exotic foods and seasonal foods that can only be grown overseas, such as strawberries and apples. Food is also sometimes produced more cheaply overseas which is attractive to supermarkets who want the lowest prices possible. All of these factors increase the distances travelled by foods consumed in the UK, so increase UK food miles.*

1.6 The environmental consequences of increased food miles is an increased carbon footprint. The transport, such as planes and lorries, required to import products results in the release of carbon emissions into the air.

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Water quality is heavily managed in the UK. This is done via the Environment Agency through a combination of thorough monitoring and treatment and strict laws and regulations to prevent pollution incidents. Firstly there are strict regulations in place to reduce the amount of run-off from chemical fertilisers, cooling water from power stations, and sewage that enters the river systems in the UK. To enforce these regulations, water quality is constantly monitored around the UK and sanctions are in place for water authorities that do not meet certain standards.*

Cleaning also takes place to ensure water is clean. Water supplies are filtered to remove any sediment and chlorine is added to the water supply to purify it. Water use regulations are also introduced in times of potential water shortage – such as restricting recreational use of water sources in drier times. All of these strategies aim to ensure there is water availability but that it is also of a good quality.

1.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *There is a definite link between the pattern of availability of food and water on a global scale. Water scarcity is evident in many of the world's poorest countries due to actual lack of water sources, not having enough money to exploit water sources, or both. Physical water scarcity is mainly found in countries that are located around 30 degrees north of the equator, such as in the north African countries Algeria and Libya, the Arabian Peninsula, and significant parts of India and China. Economic water scarcity is more widespread, affecting virtually all countries in Africa, South and Central America, and South East Asia. Availability of food follows a similar geographical pattern to water and can be measured through levels of undernourishment. The poorest countries in Africa and Asia see the highest rates of undernourishment. The very highest rates of undernourishment are found in African countries, such as Mozambique and Sudan, where over 35% of the population are undernourished.*

2.1 The UK's energy sources have changed significantly between 1990 and 2020. The amount of coal used has dropped dramatically, from around 70% in 1990 to 5% in 2020. There has been a shift towards using renewable sources. In 1990 there was no use of renewable sources but by 2020 it had risen to around 45%. Finally gas is now an important energy source; virtually unused in 1990, it now accounts for around 35% of the UK's energy sources.

2.2 One economic issue associated with exploiting renewable energy such as wind and solar power is the high initial cost of building of the required infrastructure. A second economic issue could be the loss of tourism revenue because less people will visit areas with wind farms.

2.3 One economic issue linked to exploiting nuclear power is that nuclear power plants are very expensive to build and decommission. One environmental issue is the potential risk of a leak of radioactive waste if it is not correctly stored.

2.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Renewables are vital to the UK's changing energy mix because they provide a long-term solution to over-dependence on fossil fuels. Renewables will not run out and once established will be in place forever. They are also clean energy sources that contribute less to the production of greenhouse gases so help the UK to move towards it climate targets.*

2.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Energy security means having a safe and affordable supply of energy that meets demand. At present the UK cannot say that it is energy secure because due to coal running out and supplies of oil and gas reserves being rapidly exhausted it is no longer self-sufficient in energy. In 2018 it had to import 36% of its energy and this is thought to be approaching 50% now.*

To meet energy demands in the future there are various options open to the UK, some of which involve investing and exploiting quite controversial new energy sources. An example of this is shale gas. Shale gas is a form of natural gas trapped underground in shale rocks that can be released by fracturing the rock using high-pressure liquid and gas in a process known as fracking. The UK has deposits of shale gas. Fracking is controversial because it can pollute underground water sources and has been linked to increasing the risk of earthquakes.

A second way to increase energy security would be to increase the amount of energy produced by renewable sources. This amount is currently around 40%. The biggest contributor by far to this figure is wind power. Energy security could be improved with more investment in the required infrastructure for wind power, such as off-shore wind farms. A final supply of energy that could be exploited is nuclear power, which at present provides around 16% of UK energy but may be able to contribute more in the future. Despite being a low carbon energy source, nuclear power is controversial due to risk of radioactive leaks and high costs.

In conclusion, it is clear that to become more energy secure the UK needs to reduce its reliance on both fossil fuels in general and importing energy sources. To do this, investment is needed in a range of different sources of energy.

3.1 Glasgow is likely to have a water surplus.

3.2 London is likely to have a water deficit.

3.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	● Sound, organised, and relevant throughout, using supporting evidence and examples ● Communicates good knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives) ● Uses geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Explanations are partial ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Water transfer is the movement of water from areas where there is a water surplus to areas where there is a water deficit. This is necessary in the UK because there is an imbalance of supply and demand. Water supply is highest in areas of heavy rainfall, such as areas in the north and west and, in particular, north west Scotland. These are also the areas with the lowest populations densities. Water supply is lowest in areas where there is less rainfall and population density is highest, such as the south east and London. This means that water needs to be transferred from the northern and western areas of the UK to the Midlands, south east and London areas where the demand is highest.*

3.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised, and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Locally sourced food reduces carbon emissions because it reduces the need for transport and food miles. When people buy food directly from local farmers at farm shops or farmers markets, or through pick-your-own schemes, that food has not been on a long journey and so has less food miles and so contributes less to greenhouse gases. Buying locally also reduces the amount of food that has to be imported, further reducing the amount of transport required and the resulting carbon footprint.*

3.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised, and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *There is significant inequality in global consumption of energy. HICs use far more energy than LICs for a number of reasons. They use energy in factories and industrial developments and use much more energy domestically as increasing wealth means that people use increasing amounts of energy on appliances in their homes, such as lights, dishwashers and washing machines. LICs use far less energy in homes, as people do not have the wealth to purchase these appliances and luxuries. In some cases, communities in LICs still rely on fuel wood to heat and cook. There is growing demand for energy in NEEs as economic and industrial development rapidly takes place, standards of living improve and industrial development occurs.*

Oxford Revise | Geography | Answers

Chapter 36

All exemplar answers given are worth full marks.

1.1 B

1.2 Figure 1 shows that there is clear inequality in global patterns of food consumption. It is highest in North America and parts of Western Europe, where calorie intake is between 3480–3770 per head. It is lowest in the poorest countries of the world: much of Africa, along with India, Pakistan, and Mongolia have an average intake of fewer than 2390 calories. Much of South-East Asia and parts of South America have nearly as low levels of calorie intake.

1.3 Global food demand is increasing due to the rising global population. It is projected that by 2050, the world's population will reach 9.3 billion. Alongside this, rising standards of living means that demand increases as people can afford to buy more food. Diets are also changing away from vegetarian and towards meat eating, fuelled by increased wealth and improvements in transport and storage improving the availability of different foods.

1.4 Food security is having enough food that is affordable and nutritious to maintain a healthy and active life.

1.5 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Food insecurity has a range of social, economic, and environmental impacts. Firstly, it can cause famine, which is when there is a widespread lack of access to food. This often causes malnutrition, which ultimately can lead to starvation and death. A famine occurred in Somalia between 2010 and 2012, during which it was estimated that 18% children and 258 000 people died in total due to malnutrition.*

Food insecurity also leads to rising food prices, which impacts most heavily on LICs. This can be made worse by global events such as Covid-19 and the (2022–) war in Ukraine, which have an impact on food supply chains and cost of food and animal feed as well as transport. Food insecurity leads to pressure to grow food in less sustainable locations and growing too much food which in the long term leads to loss of fertility in the soil and soil erosion.

All of these pressures for access to food can lead to social unrest especially where access is most limited such as North Africa and the Middle East.

1.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Biotechnology is a method of food production that can increase supply. It includes the use of genetically modified (GM) crops that are adapted to survive in harsh conditions to ensure they produce higher yields, often without access to fertilisers and pesticides. An example of higher yields produced by GM is in the Philippines where GM maize produces 24% more crop than previous non GM varieties. Crops can also be modified so that they are resistant to diseases that have caused a problem in the past. An example of this would be GM wheat that is now resistant to disease.*

1.7 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Food waste is a major contributor to food insecurity, so reducing waste will be beneficial. This can be done by encouraging people to only buy the food that is needed and by changing 'use by' and 'best before' labelling where possible so that food is kept for longer before being disposed of. Increasing*

food refrigeration and storage and using sealed plastic bags for fresh produce is also beneficial because these extend the shelf life of food and reduce waste.

1.8 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Urban farming is where small spaces within urban areas are used to grow crops or fruit and herbs on a small scale, which are then shared among local communities. The benefits of this are increased food supply locally, but also job creation and a stronger community spirit. In addition, as the food is being grown within communities, it reduces the need for transportation: food miles are reduced. An example where urban farming has been successful has been in Cape Town in South Africa.*

1.9 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *One of the major challenges facing the world is the mismatch between the growing demand for food and the supply either not keeping pace with this demand or not being evenly spread. Attempts have been made to address this issue to ensure that food supply can be adequate and reliable, and that levels of food insecurity do not escalate.*

Demand for food is increasing due to the rising global population. It is projected that by 2050, the world's population will reach 9.3 billion. Alongside this, rising standards of living mean that demand increases as people can afford to buy more food. Diets are also changing away from vegetarian and towards meat eating fuelled by increased wealth, and improvements in transport and storage have improved the availability of different foods.

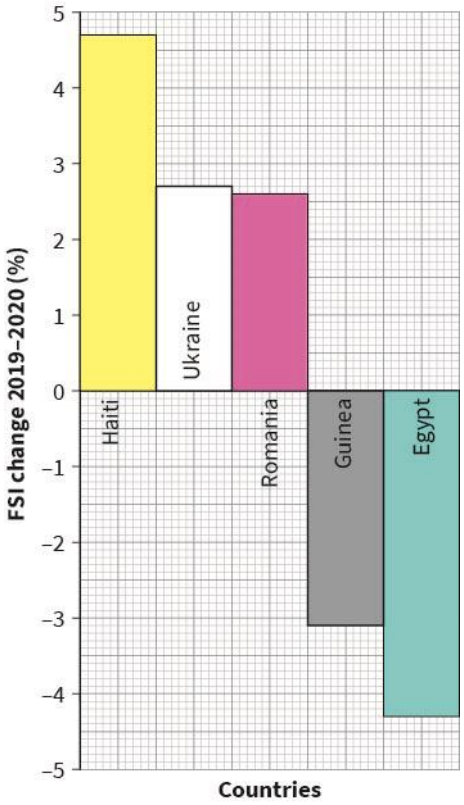
To ensure food production grows at the same pace as this demand, a number of strategies have been developed, both traditional and modern. Irrigation projects have increased to ensure there is enough water to grow crops commercially, such as the Indus Basin irrigation scheme. These are often part of a 'green revolution', where better irrigation alongside improved soil conservation and improved seed science are being used to improve overall yields.

Modern techniques such as the use of biotechnology also increase food production. Genetically modified (GM) crops are being developed in many parts of the world to increase yield and resistance to disease. A good example of this is in the Philippines where GM maize produces a 24% higher yield than traditional seeds. Aeroponics and hydroponics have been introduced to deliver nutrients straight to crops rather than through the soil, which speeds up cultivation and lengthens the growing seasons.

In conclusion, it is my opinion that modern and improved techniques will help global food production keep pace with increasing demand. However, it is difficult to be completely confident where there are so many changing factors that could threaten food supply in the future, such as climate change, and war and instability within countries.

2.1 7.8

2.2 The bar graph should be completed as below. Shading or labels should be added to clearly delineate the two bars and the countries they represent.



2.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Food supply is affected by a range of factors. Firstly, the climate will influence food supply where regions that experience extreme temperatures and a lack of rainfall will struggle to produce food. Climate change may impact these already struggling areas and could also increase the spread of diseases and pests that further threaten food supply.*

Secondly, it is often poorer LIC countries that cannot afford new technology to improve food production such as biotechnology, irrigation, and agrochemicals. Without this technology, field yields tend to remain low.

A third factor that influences food supply would be war and conflict, which can lead directly to the destruction of crops and livestock and can cause farmers to flee their land. A good example of this is the war in Ukraine, which has had a large impact on grain production. Food can also be used as a weapon, in which food supplies are cut off, affecting global supply chains. Again the war in Ukraine is a good example of this, as the blockade of the Black Sea blocked food exports.

2.4 Food insecurity is when a country cannot supply enough food, either home grown or imported, to feed its population.

2.5 A sustainable food supply is when there is enough food produced to meet the needs of the population while preserving the soil, water, and environmental resources for future generations.

2.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Aeroponics and hydroponics are technical solutions to improving food production by growing them without soil and delivering nutrients to the crops directly rather than through the soil. Aeroponics involves growing the crops in an air or mist environment suspended in a greenhouse with their roots exposed. This is a good technique because less water is needed. Hydroponics is where plants are grown in mineral rich water rather than soil. Both techniques speed up growth and therefore yields but are expensive and energy intensive.*

2.7 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The new green revolution is the introduction of modern farming techniques in LICs. These improve yields in food production and therefore reduce food insecurity. The main aspects of this new green revolution are increased irrigation through schemes such as water storage tanks that enable drip irrigation schemes to increase food production, and the introduction of new high yield varieties of seeds that improve food production. The final aspect of this new green revolution is water and soil conservation. These schemes have been very helpful in the state of Indian state of Bihar where they have managed to double their rice output.*

2.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *The Makueni County Food and Water Security Programme in eastern Kenya is an example of a sustainable project to increase food production in a sustainable way and has proved to be a large success. Run and administered by the charity 'Just a Drop' and the Sand Dam foundation, the plan focused on improving access to a clean and safe water supply by building sand dams in the village and installing a*

rainwater harvesting tank, both of which are cost effective and easy to manage and maintain. This water security then improved food security because there was a constant reliable supply of water to grow crops. Alongside the focus on water there was a training programme with support for local farmers and a tree planting scheme that aimed to reduce soil erosion so that more food could be produced in the long term.

There are a wide range of benefits from this project so I would say that it has been successful. Alongside making the water supply more reliable, it has increased crop yields and reduced food insecurity. More effective food and water production means that there is more time available for work and education, which will help improve levels of development in general.

2.9 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms

Marks	Description
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *There are many different sustainable methods that have been introduced to improve food supply and food production techniques. Encouraging people to eat meat and fish from sustainable sources reduces the impact on the ecosystems. Quotas on fishing are good because they protect and monitor the fish stock. Sustainable meat production is small in scale and often uses organic techniques without the use of chemicals. This prioritises animal welfare, which can make products more expensive but is increasingly popular with the public.*

Changing people's attitudes is also important so that they expect less exotic fruit and eat more food that is locally grown and 'in season'. This is good because it reduces food miles and our carbon footprint.

Encouraging people to waste less food and only buy what they need is also sustainable. This can be done through more careful labelling and sensible interpretation of 'sell by' or 'use by' dates. Reducing food waste is predicted to reduce food demand by 22% by 2050, so would be an important contribution to meeting demand.

A final sustainable method of food production is urban farming, which is the production of crops and grazing of livestock around urban settlements. This uses up wasted land and means that the food and meat that people eat is fresh and healthy, as well as creating jobs and a strong community spirit. However, it could be argued that the amount of food that is produced is on such a small scale that it will not make enough of a difference.

Overall, there are a range of sustainable food methods that could improve the health and reliability of food. However, many of these techniques such as eating organic and sustainable meat and fish are expensive and so not an option for some. Some people might say that the other options are too small-scale to make a large difference to the global demand for food, but if all of the options are implemented, they could be effective.

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Chapter 37

All exemplar answers given are worth full marks.

1.1 C

1.2 Water stress is extremely high in the Middle East and parts of central Asia. North America and Europe have largely low-medium or medium-high levels of water stress. Water stress is lowest across sub-Saharan and central Africa, as well as most of South America.

1.3 Water availability is determined by several factors. Physical factors such as climate and geology are important: if an area receives low rainfall, then there will be less water available, and areas with impermeable rock types will be able to build up underground water supplies. Poverty also influences water availability, because communities may not have access to shared water supplies or the required infrastructure to transfer water.

1.4 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Economic development could lead to increased water consumption because it will lead to more factories, which use large amounts of water and require energy which again requires water in its production. Economic development is also often linked to urbanisation and as cities increase in size, more water is needed for drinking, sanitation, and drainage. Economic development also leads to rising standards of living and changing lifestyles and diets, which will increase the amount of water used domestically, such as in showers and dishwashers in homes.*

1.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Water insecurity can have impacts on agricultural production because there could be a lack of water for irrigation, which means that less food will be produced each harvest. Egypt is a country that has faced water shortages and due to this is expected to see a 30% loss in food production in the next 30 years. Secondly, droughts can lead to complete crop failure where nothing is produced at all, meaning a sudden and often devastating loss of food.*

1.6 A sustainable water supply is ensuring affordable supplies of water for the growing population in a way that is not environmentally damaging for current or future generations.

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Water conservation and water recycling are sustainable ways to manage water supply. Water conservation involves reducing excessive consumption and waste. This is done by reducing leakages and making the public aware of water waste and sensible use of water through education and introducing water meters. This will change people's behaviour, such as not washing cars, using rainwater to water gardens, and turning the tap off when brushing teeth.*

Water recycling involves reusing water that has been used in homes and factories and using it for activities such as irrigation and industry or power stations. An example of this is in the Palo Verde nuclear power station in Arizona, USA, where recycled water is used for all cooling processes and in Kolkata, India, where

sewage water is used for fish farming. Both conservation and water recycling are sustainable because they focus on limiting demand for water in a way that does not harm the environment or people's quality of life.

1.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *Water transfer is one of several strategies to increase water supply that involve moving it from areas of surplus to areas of deficit. It aims to redistribute water to ensure that supply meets demand to support economic development. However, although these schemes can be effective in meeting this aim, they can also have some serious negative impacts.*

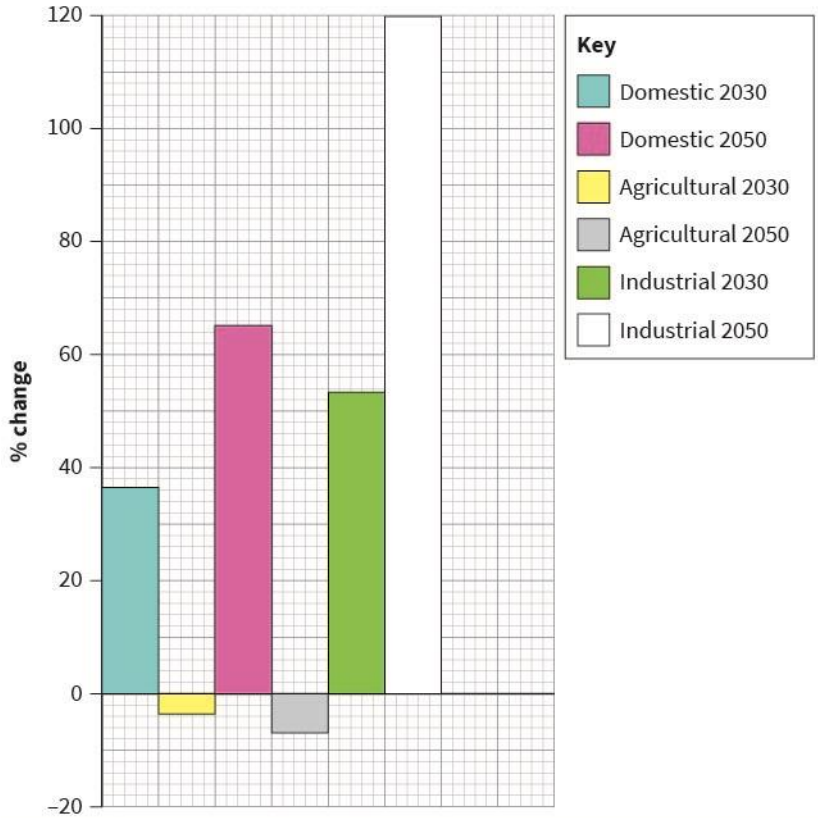
Water transfer involves the building of systems of canals and underground pipelines to take water from one river basin to another, providing a supply of water for communities that need it. In Lesotho, the Highlands Water Project successfully provides 10% of South Africa's drinking water through the building of the Katse and Mohale dams and a 200 km network of tunnels. Selling this water contributes 75% of Lesotho's GDP and this has improved people's quality of life and improved the ecosystems in South Africa.

On the other hand, there are some disadvantages evident in water transfer schemes which make them less reliable in solving water shortages. It is estimated that 40% of the water that is sent through the scheme is lost through leakages. Furthermore, the poorest people in South Africa cannot afford the cost of the water, which means that their standard of living is not improved. In addition there are major environmental concerns about water transfer schemes as is evident in the destruction of valuable wetland ecosystems in Lesotho.

It is therefore clear that water transfer schemes can be successful in redistributing water to those that need it. However, the cost of the schemes, both at the outset and for the communities that want to buy the water and the impact on the environment make it doubtful whether these schemes will solve water supply issues alone. They need to work alongside schemes to reduce overall demand and conserving our water supplies.

2.1 56.9

2.2 The bar chart should be completed as below:



2.3 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Water use is expected to increase at a rapid rate in the industrial and domestic sector due to global improvements in levels of economic development. Economic development will often lead to industrial and factory growth which uses large amounts of water in the cooling process. Industry requires large amounts of energy that also require water in their production. There will also be greater demand domestically due to economic development. Improved levels of economic development lead to changing lifestyles that increase water demand, such as owning more home appliances, showers, and baths.*

2.4 Water insecurity is also known as water scarcity, and it means when there is not enough safe water to meet the needs of the population.

2.5 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *There is increasing global water insecurity because of several factors. Firstly, a steady increase in the world's population means that increasing amounts of water are needed. Increased population means a greater demand for food and more water needed for irrigation. Secondly, economic development also results in greater demand for water because there will be more factories requiring more energy. Both factories and energy production require water to function and can also lead to pollution of water supplies, further affecting water security. Economic development also leads to changing lifestyles that include the use of more domestic appliances such as showers and washing machines. Lastly, there are increased pressures on water supply due to climate change.*

2.6 Water stress is when the water supply does not meet demand or the quality of the water is not good enough to meet the needs of the population.

2.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *There are several ways that water supply can be increased, either by finding new sources or by moving it from areas of surplus to areas of deficit. Desalination is a complex process where salt is removed from seawater so that drinkable water is created. As well as being complicated, this is also an expensive process so is often only used when there are no other options.*

Dams can also be used to control water supply by storing water in reservoirs in times of heavy rainfall and releasing it gradually in times when there is low rainfall. A good example is Kielder Water, which is the UK's largest reservoir. It was created after the River Tyne was dammed.

Water transfer schemes aim to divert water away from areas where there is a surplus to areas that have a deficit. They involve building a dam across one or more rivers, storing the water in reservoirs, and then transporting the water though pipelines to other areas where demand is not being met. One of the largest examples is the south-north water transfer scheme in China, where water is transferred through canal systems from the Yangtze River in the south to the drier Yellow River region in the north.

2.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *There are a range of sustainable water supply options that aim to manage existing water sources without harming the environment or jeopardising supplies for future generations. A large focus for the sustainable management of water is conserving supplies through reducing demand and reducing waste. Therefore, conservation involves improving public information so that people make small changes in their homes, such as not washing cars or only using full dishwashers and washing machines. Alongside this, water meters can be installed, which help to make people more aware of how much water they are using.*

These strategies would be quite cheap to implement and if all families made changes could be quite effective.

A second major sustainable strategy is recycling water and using 'grey' water (water that has been used before) for uses that do not need clean water. Uses include watering gardens, irrigation, or industry. In Kolkata, India, sewage water is reused for fish farming and crop production. This could be harder to implement than conservation because it may require expensive new technology to be introduced in homes and offices. It also relies on people changing their attitudes to the idea of reusing water.

Finally, groundwater management can be an effective way of managing water supplies. This involves the careful monitoring of how much water is abstracted from underground water supplies so that levels are maintained at sustainable levels and contamination does not risk the supply.

In conclusion, there are a range of sustainable ways to improve water supply, all of which come with advantages and disadvantages. For maximum effectiveness, both aspects – reducing demand and maintaining and protecting supply – need to be implemented together.

Oxford Revise | Geography | Answers

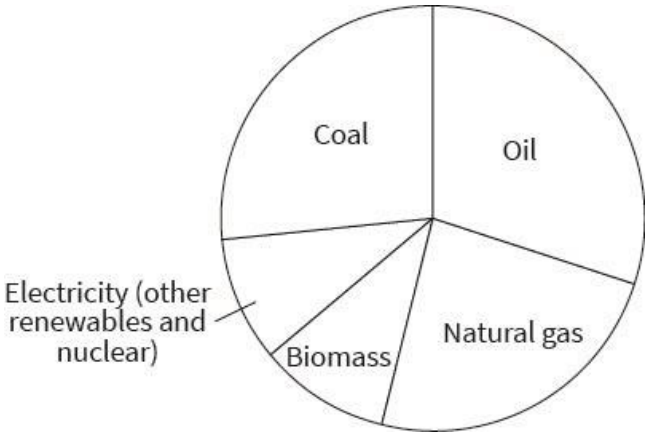
Chapter 38

All exemplar answers given are worth full marks.

1.1 A

1.2 Energy consumption per person is highest in North America and parts of the Middle East. It is above 1001 kg of oil equivalent across most of Europe. Much of central and sub-Saharan Africa has the lowest energy consumption per person.

1.3 The pie chart should be completed as below:



1.4 Globally the biggest source of energy is oil (30%) followed by coal and natural gas. This means that globally 80% of energy consumed is a non-renewable, fossil fuel energy. Nuclear and renewable supplies of energy, such as solar and wind power, only make up 10% of global energy. Biomass makes up the final 10%. This is another renewable source of energy made out of living products, such as plant and animal waste.

1.5 One advantage of using wind turbines to create energy is that wind power is a renewable source of energy that will not run out. A disadvantage is that the wind may not be reliable and, if it is not windy, less energy will be produced.

1.6 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised, and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary

Level	Marks	Description
	0	No relevant content

Example answer: *Physical factors can affect energy supply because they influence what energy can be produced. The geology of an area will determine whether fossil fuels can be accessed and removed. Areas that are close to tectonic plates, such as Iceland, will be able to generate geothermal energy.*

Political factors can also influence energy supply because conflicts can seriously affect energy pathways. The Ukrainian conflict with Russia is an example of this. If a country develops nuclear power, other countries may fear that they are doing this for non-peaceful reasons. Political relations can then become strained, which can affect energy supplies.

1.7 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Energy insecurity is when a country does not have access to a safe, reliable, and affordable energy supply. This has a number of implications. Environmentally, energy insecurity can lead to countries exploiting energy resources in more and more environmentally fragile areas that have recently been protected, such as the Arctic. Energy insecurity will also have an economic impact because access to affordable energy is vital for developing industry and maintaining production in factories. Without energy supplies, it is difficult to maintain economic growth. An example of this would be in Pakistan, where regular and long power cuts are estimated to cost the country 4% of its GDP. Not having access to energy also influences food production because people, often women, spend their time collecting firewood rather than working on farms and producing food. This means that areas without energy may also suffer from food insecurity. Finally, rising energy insecurity can increase the likelihood of war and conflict as countries fear their energy supply will be limited or energy prices will increase too much. The Middle East produces 56% of the world's oil. This contributed to the Iraq war in 2000s as western countries feared their lack of control over these energy resources.*

1.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *The issues affecting global energy supply differ over time and impact countries to varying degrees. Firstly, physical factors influence global energy security. These factors tend to be quite consistent and do not change over time. Mountainous areas are able to develop hydroelectricity because they tend to have faster flowing rivers and areas that are close to tectonic plates will be able to produce geothermal energy. Fossil fuels, such as oil and natural gas, are found in layers of particular rocks so geology will determine which countries have a supply of fossil fuels and which don't. In addition, climate will determine which areas can develop solar or wind power.*

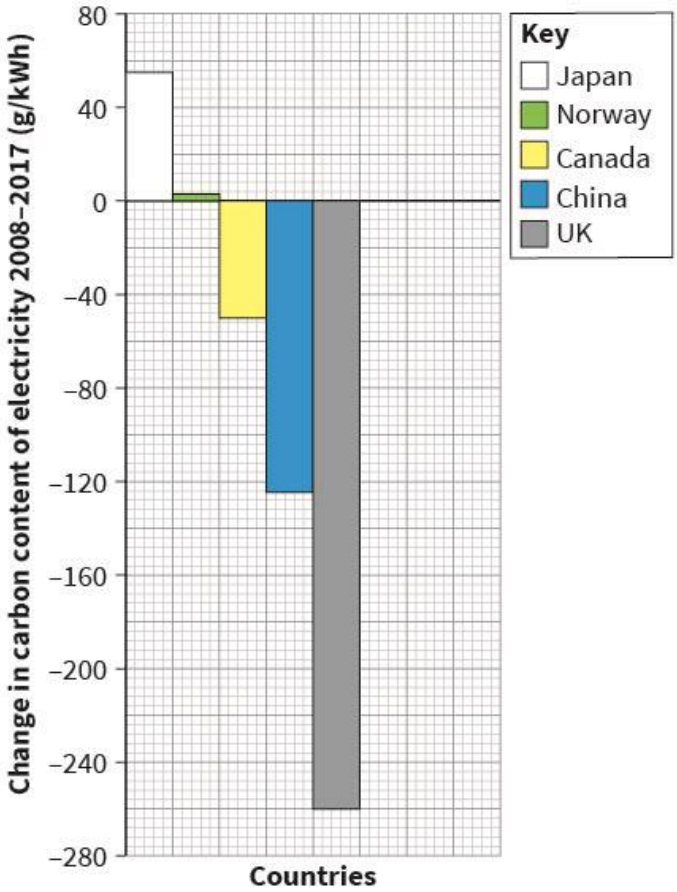
Political factors are also important in influencing global energy supplies. Political and public opinion often dictates whether a country develops nuclear power. Germany has started to shut down its three nuclear power stations in a long-term shift to renewable sources. Some countries, such as the USA, have invested large amounts in shale gas fracking but the UK has taken a more cautionary approach. Political conflict, especially conflict around access to oil and gas supplies in the Middle East, is also increasingly affecting global energy supplies. As tensions grow, western countries are looking for alternative sources of energy that will be more reliable in the long term.

Access to technology also plays a part in what energy can be accessed and where. HIC countries can afford the latest technology so can exploit resources in more difficult environments. An example of this is shale gas fracking. Finally, the fluctuating cost of energy on a global scale heavily influences which countries can access supplies.

In conclusion, it is clear that there are a wide range of factors that influence access to energy. Some of these factors are constant, such as the geology and climate of different areas. Others are more changeable, such as political tensions and the cost of energy.

2.1 The range is 315.

2.2 The graph should be completed as below. Shading should be used to clearly delineate the two bars and the countries they represent.



2.3 A possible reason for the UK recording the highest decrease in the carbon content of electricity is that other countries, such as Canada and Norway, shifted towards renewable energy before the timeframe of

the graph in Figure 4, while the UK was still very reliant on carbon-producing energy. The UK started to make changes after 2008 so the large drop reflects these later changes.

2.4 Energy security means having a safe, reliable, and affordable supply of energy.

2.5 Energy consumption is increasing mainly because of population growth. A greater number of people will require a greater amount of energy. Improving levels of economic development also increases energy use because, as people become wealthier, they use more technology, such as computers, which requires electricity. Economic growth also leads to more factories being built. These factories will need energy to operate.

2.6 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	● Thorough, detailed, organised, and relevant throughout with supporting evidence and examples ● Communicates detailed, clear knowledge and understanding ● Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) ● Good use of geographical terms and vocabulary
2 (clear)	3–4	● Sound throughout with some supporting evidence and examples ● Communicates some knowledge and understanding ● Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) ● Some use of geographical terms and vocabulary
1 (basic)	1–2	● Basic throughout with limited supporting evidence and/or examples ● Communicates limited knowledge and understanding ● Communicates using simple statements that are not developed ● Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Natural gas is a fossil fuel that is vital for energy supply globally and that has grown in relative significance in the last decade. Global supplies of natural gas are expected to last around 50 years and so there are many advantages of extracting it as a key global energy source.*

It is an advantage that there are still quite large supplies left because it means it is not too problematic if countries rely on it. Natural gas is also easier to transport than other fossil fuels, such as coal, and is more convenient as power stations using gas can be turned on an off easily. In addition, it is less environmentally damaging than other fossil fuels, producing 45% less carbon dioxide and less sulphur and nitrous oxide.

There are, however, some disadvantages of extracting natural gas. Firstly, 60% of natural gas supplies are found in Russia and other countries that are considered unstable. It is feared that these countries may use their gas supplies as a political weapon. Despite it being slightly less harmful to the environment than other fossil fuels, natural gas still contributes to global warming by producing carbon dioxide. A final disadvantage is that the process of fracking to extract natural gas is controversial. In some countries, the public are against the extraction of shale gas in this way.

2.7 One advantage of using solar photovoltaic panels is that this method of energy production does not release carbon emissions so does not contribute to the greenhouse effect. A disadvantage is that the energy produced is often seasonal because solar panels rely on sunlight.

2.8 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *A sustainable energy supply is a supply that can be used into the future without harming the environment or supplies for future generations. To reach a fully sustainable energy supply, we need to make changes to where we get our energy from but also work to reduce energy demand, waste, and inefficiency.*

Demand can be reduced by increasing energy conservation. This is an inexpensive change. Education, such as 'turning to 30' adverts, can raise awareness amongst the public about wasting energy. Adverts may also encourage people to improve insulation in their homes to reduce energy wastage. Government subsidies and financial incentives can also encourage people to be more energy efficient.

Sustainable energy supplies are renewable sources such as solar, wind, geothermal, biomass and hydropower. The advantage of using these sources of energy is that doing so reduces our overall reliance on fossil fuels which, in turn, reduces carbon dioxide emissions. Renewable sources also do not run out. They are, however, not always suitable for all areas. Solar power requires quite intense sunlight and geothermal electricity can only be developed in countries that are tectonically active. Alongside using renewable energy sources, existing fossil fuels can be extracted more efficiently. This will mean that existing supplies will last longer.

A good example of where both energy supply and demand has been developed sustainably is Malmo in Sweden, where a large proportion of buildings use 100% renewable energy such as solar power. Public transport use is encouraged in order to reduce energy demand and buses run on a mixture of biogas and natural gas.

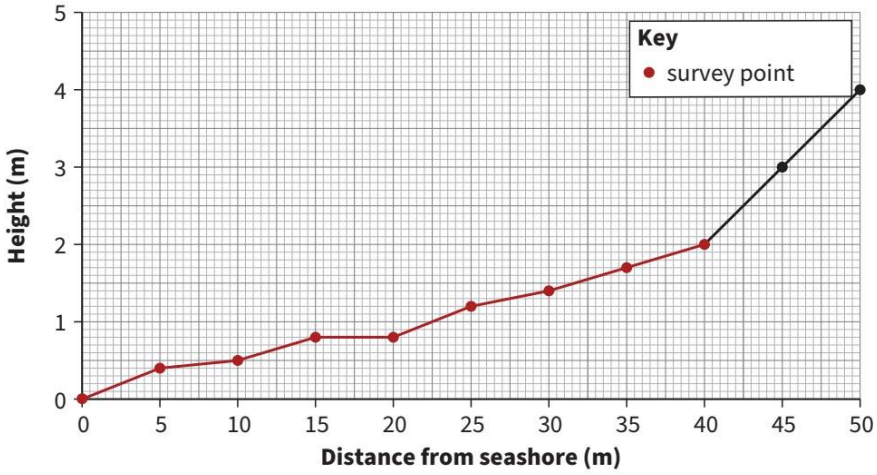
In conclusion, it is clear that there are a range of developments that can be introduced to balance energy supply and demand. It is important that both sides are considered equally if we are to improve our global energy security.

Oxford Revise | Geography | Answers

Chapter 39

All exemplar answers given are worth full marks.

1.1 The line graph should be completed as below:



1.2 The height of the beach is 0.8 m (80 cm) at 20 metres from the seashore.

1.3 A line graph is a good way of showing a beach gradient cross section because it is very clear and shows all of the gradient changes and breaks in changes.

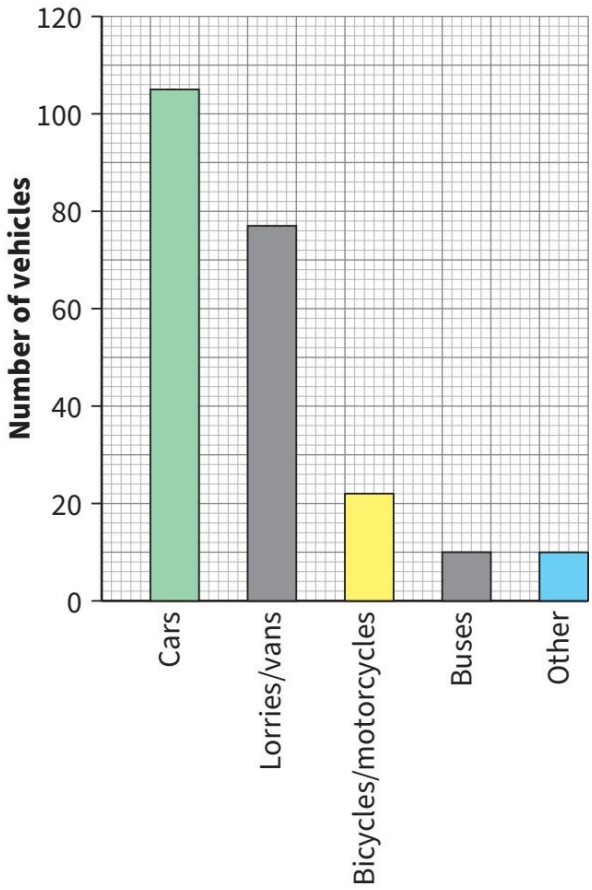
1.4 One potential risk of conducting coastal fieldwork is that the tides change and you could find that you are cut off from the beach or the rest of the group if the tide has come in faster than you were expecting.

1.5 This is a flow-line diagram.

1.6 One way that the flow-line diagram could be adapted is by adding a scale or a key so that you can calculate how many vehicles each flow line represents in reality.

1.7 The flow line map shows that the most vehicles are travelling in both directions along Cromwell Road. Morpeth Street (south of Cromwell Road) is the second busiest and Morpeth Street (north of Cromwell road) is the least busy. Morpeth Street both north and south of Cromwell Road have more vehicles travelling towards Cromwell Road. On each road, cars were the most common vehicle, followed by lorries and vans, with bicycles and motorbikes the third most common.

1.8 The bar chart should be completed as below:



1.9 Secondary data is data that has been collected by others, such as census data.

2.1 During our physical geography enquiry we measured the velocity of the stream by timing how long it took a cork to travel 10 metres. We did this three times to get an average so that our data was more reliable.

2.2 In our human geography enquiry we analysed the environmental quality data by calculating the mean score for each site. We could use these mean scores to compare the different sites statistically.

2.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary

Level	Marks	Description
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *In our physical geography enquiry we collected data about the shape of the bedload at three different sites along a river to identify whether there were any changes as we moved further away from the source. One of the data presentation techniques we used to present this information was drawing a pie chart to show the shape of the bedload we collected. The pie charts were useful because they clearly showed the proportion of each different shape – angular to subangular to rounded. We colour coded each section of the pie chart so that the different proportions were clearly identifiable. We drew three pie charts so that we could make clear comparisons. This helped analyse our findings and identify that we found significantly more rounded stones in one of the sites – the site further from the source. This then helped us conclude that the shape of the bedload does change as you move downstream.*

2.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms

Marks	Description
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *In our physical geography enquiry we were aiming to investigate the extent to which a river changes from its source to its mouth and I think to a certain extent the results we collected and how we analysed them helped to reach valid conclusions about this aim.*

Initially we started with a hypothesis with two parts. Firstly, that we expected the bedload to get more rounded as we moved further away from the source. We collected a sample at 3 sites and our results showed clear changes. We found out that the bedload varied but there were slightly more angular rocks and stones in the site nearest the source of the stream. We found that there were more stones judged as 5 on the index of angularity (5 is the least angular or the most rounded) as we moved further downstream. From these results we able to make the conclusion that part of our hypothesis had been correct and that the bedload did get more rounded as we moved further away from the source. However, the other set of results that we collected were less useful in helping us reach conclusions. We investigated the velocity of the water to test the hypothesis that the water would be flowing faster as you move further away from the source. Our results, however, did not give us any clear patterns. At site 1 nearest the source the average velocity was 23 seconds, at site 2 it was 11 seconds and at site 3 it was 28 seconds. This is not the pattern we would expect. This could be because of human error. We did not find a clear pattern in how the velocity changed across the stream channel. This could be because there was a large amount of rocks and stones which affected the stream flow and the results that we got, making it more difficult to make strong conclusions.

Therefore, we were partially able to make judgements using our results and were therefore able to tentatively make conclusions about parts of our investigation. In parts the validity of these conclusions were weakened because of the limitations we faced due to the location we visited and the simplicity of the fieldwork methods employed.

3.1 A questionnaire survey

3.2 A question that could come at the start of the survey is 'Are you are permanent resident or are you just visiting for a short period of time?'

Accept other similar suggestions.

3.3 Closed questions are used so that the responses are easier to analyse using data presentation techniques such as graphs and clear patterns can be identified.

3.4 Sample size is important because if you ask too few people their views will seem more significant than they really are. The larger the sample, the more representative the results will be.

3.5 Question 3 could be relevant because finding out about the type of work that they do could help us understand whether their work is directly linked with tourism. This may influence their opinions.

3.6 The teacher has insisted on interviewing in a pair to keep the students safe and so that they are never alone speaking to strangers. They shouldn't interview in a group because this can be quite intimidating for the public and might put them off answering the questionnaire.

3.7 Bias could be introduced by the students because they may not ask a cross section of people. They may only ask people who are willing to stop and engage in conversation – such as elderly people rather than people of a working age. This will not get a representative set of results.

3.8 You could investigate the following question. What is the quality of environment in this residential area?

Accept other similar suggestions.

3.9 This question is level-marked:

Level	Marks	Description
2 (clear)	3–4	• Sound, organised and relevant throughout, using supporting evidence and examples • Communicates good knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives) • Uses geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Explanations are partial • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *Fieldwork risks in urban environments could be reduced by setting out clear rules and expectations about students crossing roads carefully because of traffic risks. Students should also be given clear areas in which they can go in so that they do not get lost or stray into more dangerous areas and clear meeting points. Students should always remain in pairs or groups when carrying out fieldwork or asking people questionnaires so that they are not along when talking to strangers. This reduces the danger of talking to strangers unsupervised.*

4.1 One factor that affected our primary data collection in our human geography enquiry was that when we collected our pedestrian count data for different places we did so at different times of the day. This meant that for some places the data was collected at busier times than others which will influence our results and analysis.

Answers will vary depending on fieldwork undertaken.

4.2 In our river enquiry we tried to measure the velocity of the water by timing how long it took a cork to travel a 10-metre distance. The problem with this technique was the cork kept getting trapped by big stones so

we had to dislodge it ourselves and place it away from the stones. This clear had an impact on the results because at times we were not very careful about where we moved the cork to.

Answers will vary depending on fieldwork undertaken.

4.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

Example answer: *In our human geography enquiry we started with the aim of investigating how effectively the redevelopment of Brindley Place in Birmingham had been in improving the environment. We broke this overall aim into two hypotheses. Firstly, we hypothesised that the redevelopment would have had a very positive impact on the visual environment such as what the buildings and canals looked like and how well landscaped the area was now. Our second hypothesis linked to improving the environment was that we predicted that the redevelopment would have made the area more sustainable through the introduction of more recycling schemes.*

To a certain extent our conclusions matched these aims and hypothesis. We found through our questionnaires and quality of environment surveys that all parts of Brindley Place had a really good environment, with clean buildings, landscaped areas and water features and minimal litter. The second part of our conclusions were less convincing, however. We were able to photograph lots of evidence of recycling opportunities and we also found and photographed the pedestrianised areas so could conclude that there was less air pollution and traffic problems. However, as we did not test air quality we can't be completely sure of this conclusion about sustainability.

Answers will vary depending on fieldwork undertaken.

4.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

Marks	Description
3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
2	• Generally accurate spelling and punctuation • Most rules of grammar followed • General control of meaning • Uses good range of specialist terms
1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *In our human geography enquiry we started with the aim to investigate how effectively the redevelopment of Brindley Place in Birmingham had been in improving the environment. We collected a range of data that was varied in its value in helping us reach conclusions.*

One of the most effective set of findings was our quality of environment survey results. We carried out surveys at a number of sites around the Brindley Place area and then analysed these results by calculating the mean quality of environment score overall and for the different criteria. This clearly showed us that after the redevelopment the quality of environment was very good in different aspects. We also took

photographs of different areas that clearly showed us how much focus had been placed on the environment when the area was redeveloped. We took photographs of the landscaping, the cleaned-up canal and also the architecture.

Both of these results were useful but were not perfect because they did not really allow us to see how the area had changed over time. We could have used additional data sources, which would have strengthened our conclusions and made them more reliable. It would have been very useful to have some secondary data showing what the environment used to be like, such as old quality of environment survey results, so that we could make a more effective judgement about how it had changed. We could also have used the internet to find old photographs of Brindley Place before the redevelopment had taken place so that we could be more confident in our conclusions that the environment had improved.

In conclusion, I feel that while our data was strong and effectively showed us how good the environment was, the additional data would have enabled us to compare the area before and after redevelopment, which would have improved the validity of our conclusion.

5.1 In our human geography enquiry we asked people questionnaires about their opinions of the redevelopment in Brindley Place, Birmingham. The problem with the questionnaire that we used was that there were only open questions used so it was quite difficult to analyse the results.

Answers will vary depending on fieldwork undertaken.

5.2 In our human geography enquiry we were investigating how the redevelopment of Brindley Place had changed the land use in the area. We analysed the data we had collected by completing a land use map showing the different types of buildings. We designed a key and shaded it accordingly. We then calculated the percentage of each different type of building to see which were the most significant and then compared the land use map to before the redevelopment had happened.

Answers will vary depending on fieldwork undertaken.

5.3 This question is level-marked:

Level	Marks	Description
3 (detailed)	5–6	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	3–4	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–2	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary

Level	Marks	Description
	0	No relevant content

Example answer: *Our physical geography enquiry involved investigating the extent to which a stream changes as you move further away from the source. We chose a tributary of the River Severn in Cardingmill Valley. This was a suitable location because it was close to our school, so it was relatively easy for us to get there and back in one day. A second reason it was a good location was that it is public land that is owned by the National Trust. This meant that we could access the river easily and did not have to cross any private land or get additional permission. As it was a National Trust area, there was an information centre and toilets available for us. We chose three sites to investigate when we were there. These were suitable because they gave us varying data and helped us meet our aim of investigating whether the stream varies in characteristics as you move further away from the source. We chose one site as close to the source as we could get and then moved further downstream as far as we could. Although we tried to plan this, it did not work perfectly because we had to walk between sites so in reality they were not that far apart and did not truly reflect how a stream or river might change.*

In conclusion, I believe that we did our best to choose a good general location that made it possible for us to get in the river and carry out our investigations in a safe and controlled environments but there are some improvements that we could make if were doing this investigation again such as planning different sites that were further apart.

Answers will vary depending on fieldwork undertaken.

5.4 This question is level-marked:

Level	Marks	Description
3 (detailed)	7–9	• Thorough, detailed, organised, and relevant throughout with supporting evidence and examples • Communicates detailed, clear knowledge and understanding • Communicates using developed statements and ideas (e.g. uses connectives to fully explore ideas) • Good use of geographical terms and vocabulary
2 (clear)	4–6	• Sound throughout with some supporting evidence and examples • Communicates some knowledge and understanding • Communicates using linked statements and ideas (e.g. uses connectives, but needs further development) • Some use of geographical terms and vocabulary
1 (basic)	1–3	• Basic throughout with limited supporting evidence and/or examples • Communicates limited knowledge and understanding • Communicates using simple statements that are not developed • Little or no use of geographical terms and vocabulary
	0	No relevant content

3-marks: SPaG (spelling, punctuation, grammar, and specialist terminology)

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3	• Accurate spelling and punctuation • Rules of grammar followed • Effective control of meaning • Uses wide range of specialist terms
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1	• Reasonably accurate spelling and punctuation • Some rules of grammar followed – errors do not hinder meaning • Some control of meaning • Limited use of specialist terms
0	• Writes nothing • Does not relate to question • Basic grasp of spelling, punctuation, and grammar prevents clear meaning

Example answer: *In our physical fieldwork enquiry we set ourselves the aim of investigating whether velocity and bedload changed as a river moves away from its source. In our conclusions we were able to make judgements about these original aims, but these judgements were more confident for some aspects over others.*

Our results did not support the idea that the velocity of the river increases as you move away from the source. What we found in our results was no pattern at all and therefore may have to conclude that velocity does not increase as you move further away from the source. However, these results may not be reliable because when we visited the river there had been a heatwave and a period of very little rain which meant that the river levels were very low. This could have given us unreliable results and conclusions. To ensure our results were more valid and reliable I think we would need to go back to the river on several occasions and at different times of the year.

To a certain extent were able to be more confident in our conclusions about bedload because our results clearly showed that the stones became more rounded as we moved away from the source which matched our initial hypothesis. In terms of the method that we used we followed a set framework and judged the shape of the stones selected on a commonly used index. On the other hand, it is impossible to say that the results were completely reliable because we may have been biased as we picked them out of the stream which may have skewed the results. The conclusions would have been more valid if we had used a bigger sample size at each of the sites so that the results were even more representative.

Overall, therefore, I think we can say our conclusions were partly reliable, but we would need to take bigger sample sizes and revisit the site during different weather conditions to enhance their validity and reliability.

Answers will vary based on fieldwork undertaken.