Oxford Revise | Geography | Answers

Chapter 27 Will the world run out of natural resources?

All exemplar answers given are worth full marks.

1

(a)

(i) When water supplies fall below 1000 m^3 per person there is severe water stress. This occurs when the demand for water exceeds supply for a certain period or when water supplies cannot be used because of poor quality.

(ii) Areas experiencing physical water scarcity are mostly found in a belt between approximately 300N and 300S. The main areas concerned are South Africa, the Sahara Desert, the Arabian Desert, Thar and Gobi Deserts, and central and northern India.

(b) This question is level-marked:

Level	Marks	Description
3	5–6	• Thorough knowledge, understanding or analysis of the issue, process or concept. • Uses well-developed ideas and line of reasoning is clear and logically structured. • Information presented is relevant and substantiated.
2	3–4	• Reasonable knowledge, understanding or analysis of the issue, process or concept. • Uses developed ideas and line of reasoning with some structure. • Information presented is mostly relevant and supported by some evidence.
1	1–2	• Basic knowledge, understanding or analysis of the issue, process or concept. • Uses simple ideas with no developed points made. • Information is basic, unstructured, and supported by limited evidence.
	0	No response or no response worth of credit.

Example answer: *There are global inequalities in the availability of food and water because these resources are unevenly distributed across the world. Most ACs have plentiful supplies of both and enjoy a high standard of living, whereas many of the world's poorer countries, especially in sub-Saharan Africa, lack sufficient food and water, and the bulk of their populations suffer a poor quality of life. Over one billion people worldwide do not have sufficient daily calories and a further two billion are malnourished because of their poorly balanced diets. Malnourishment results in a range of illnesses and diseases. There is an imbalance in global water supply because of variations in climate and rainfall. This results in many poorer countries having a shortage of water. By 2025, 50 million people could face water scarcity and suffer severe water stress, with water supplies fall below 1000 m^3 per person. Climate change has led to more areas of the world suffering from severe droughts. This has caused the failure of harvests and has reduced the availability of sufficient food supplies.*

(c)

(i) C

(ii) Fracking is a relatively new technology involving 'hydraulic fracturing' of oil- and gas-bearing shale. This requires drilling and then the high-pressure injection of water, sand, and toxic chemicals. It is controversial because test sites have triggered small earthquakes, and groundwater has been polluted by the chemicals used in the drilling and injection processes. It is a very expensive process and alternative sources of power can be obtained more cheaply. It also encourages further use of fossil fuels. Many people argue that the focus should be on renewable energy sources if carbon emissions are to be reduced to mitigate the effects of climate change.

(iii) Energy is required for economic development because it is needed in factories to drive machinery and to provide fuel for transport. In the past, many countries could depend on their own energy resources but today the situation is much more complex with energy being traded worldwide. The world's richest countries use far more energy than poorer countries. The wealthiest 10% of the world's population consumes 20 times more energy than the poorest 10%. Energy consumption is increasing as the world becomes more developed which increases demand. As EDCs become more industrialised, the demand for energy will increase further. Oil resources are concentrated in areas such as the Middle East, Russia, and the USA. Much of Africa has few fossil fuels but, although the continent has great potential to produce HEP, there is often not the financial ability to develop the infrastructure necessary to generate power from this source.

(iv) This question is level-marked:

Level	Marks	Description
3	6–8	• Thorough knowledge, understanding or analysis of the issue, process or concept. • Uses well-developed ideas and line of reasoning is clear and logically structured. • Information presented is relevant and substantiated.
2	3–5	• Reasonable knowledge, understanding or analysis of the issue, process or concept. • Uses developed ideas and line of reasoning with some structure. • Information presented is mostly relevant and supported by some evidence.
1	1–2	• Basic knowledge, understanding or analysis of the issue, process or concept. • Uses simple ideas with no developed points made. • Information is basic, unstructured, and supported by limited evidence.
	0	No response or no response worth of credit.

Example answer: *Deforestation has taken place as power companies search for and exploit fossil fuel deposits such as oil and gas. Deforestation destroys woodland ecosystems. The ecosystem of the tropical rainforest is the most diverse of all the world's biomes. The coniferous forest ecosystem does not have as rich a biodiversity but is still unique. The loss of these ecosystems means that there is serious loss of habitats resulting in the extinction of many plants and animals. Some of the plants in these ecosystems are important sources of medicines. Removing trees removes the natural protection from the soil, leading to soil erosion. The tree cover would have sheltered the soil from wind and rain, and the removal of the trees' roots means there is nothing to bind the soil and so it is easily blown away. Forests act as carbon sinks so their removal has important repercussions for climate change. Deforestation reduces photosynthesis, transpiration, and the cooling effect of evaporation. As a result, there is less moisture to condense into clouds and we experience higher temperatures. Less CO_2 is*

absorbed. Much of the clearance of forest areas is done by burning which adds to CO_2 emissions. The build-up of CO_2 is the main reason for the greenhouse effect and global warming. Open-cast mining for coal involves whole-scale stripping of vegetation and topsoil, destroying animal habitats and destroying ecosystems. Pollution of groundwater from chemicals used in mining operations can also occur. Fracking for shale oil and gas can trigger small earthquakes and the toxic chemicals used in the drilling process can pollute groundwater. The overall effects of deforestation and mining have very serious impacts.

(d) This question is level-marked:

Level	Marks	Description
3	5–6	• Thorough knowledge, understanding or analysis of the issue, process or concept. • Uses well-developed ideas and line of reasoning is clear and logically structured. • Information presented is relevant and substantiated.
2	3–4	• Reasonable knowledge, understanding or analysis of the issue, process or concept. • Uses developed ideas and line of reasoning with some structure. • Information presented is mostly relevant and supported by some evidence.
1	1–2	• Basic knowledge, understanding or analysis of the issue, process or concept. • Uses simple ideas with no developed points made. • Information is basic, unstructured, and supported by limited evidence.
	0	No response or no response worth of credit.

Example answer: *The greater use of machines in commercial agriculture has meant that many hedges and trees have been removed to produce larger fields which are needed to justify the cost of large machinery. The loss of hedges and trees means that important habitats and ecosystems are destroyed. This leads to reduced biodiversity. The large fields have less protection and shelter making them more prone to soil erosion. Heavy machines like tractors and combine harvesters compact the soil, reducing the rate of infiltration which leads to waterlogging. The increased use of chemical fertilisers, pesticides, and herbicides has destroyed ecosystems by polluting rivers, ponds, and lakes. There is an increasing demand for water supplies for irrigation because climate change has led to more frequent droughts and reduced rainfall in some farming areas.*

(e) This question is level-marked:

Level	Marks	Description
3	5–6	• Thorough knowledge, understanding or analysis of the issue, process or concept. • Uses well-developed ideas and line of reasoning is clear and logically structured. • Information presented is relevant and substantiated.
2	3–4	• Reasonable knowledge, understanding or analysis of the issue, process or concept. • Uses developed ideas and line of reasoning with some structure. • Information presented is mostly relevant and supported by some evidence.
1	1–2	• Basic knowledge, understanding or analysis of the issue, process or concept. • Uses simple ideas with no developed points made. • Information is basic, unstructured, and supported by limited evidence.

Level	Marks	Description
	0	No response or no response worth of credit.

Example answer: *Commercial fishing includes fish farming in indoor pools and sea cages, but it is most associated with large trawlers with huge nets sweeping through the sea or across the seabed. This leads to overfishing, when more fish of a particular species are caught than can be replaced through natural reproduction. This is a huge issue, with more than 85% of the world's species of fish now being threatened with extinction. Large trawler nets are not selective in what they catch. This leads to unwanted species getting caught and thrown back alive or dead. Fine-mesh nets catch smaller fish which are of little commercial value. This reduces fish stocks because they don't grow to maturity. Bottom trawling uses weighted nets which drag along the seabed and destroy everything in their path, including delicate coral ecosystems. Fish farming also spreads diseases to surrounding ecosystems.*

2

(a)

(i) Surplus

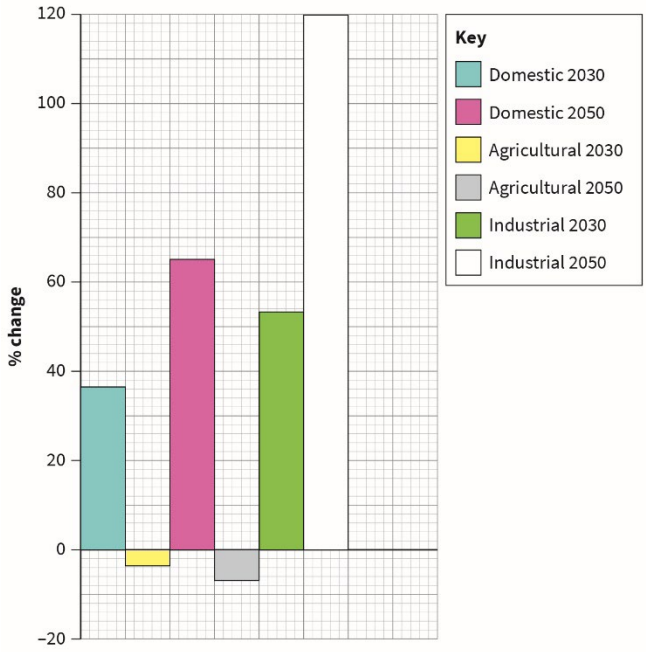
(ii) Deficit

(iii) Water transfer schemes, involving expensive reservoirs and pipelines, are needed to resolve the mismatch of the UK's water supply and demand. Demand exceeds supply in the south and east which are areas of water deficit, but supply exceeds demand in the north and west where is a water surplus.

(b)

(i) 56.9%

(ii) The bar chart should be completed as below.



(iii) As the population increases there is an increasing demand for water. As a country's economy improves, people tend to get wealthier and make more use of domestic appliances such as washing machines. This increases water usage. Urbanisation leads to an increased demand for water as there is a need for improved sewage and sanitation networks where lots of people live close together. Industrialisation leads to an increasing demand for water to use for processing cleaning, cooling, and electricity generation. This is taking place rapidly in EDCs, so the demand for water is likely to increase greatly in the future. The commercialisation of agriculture and the increased frequency of droughts associated with climate change has led to the growth of irrigation, even in an AC like the UK. In LIDCs where agricultural improvements are taking place the development of irrigation is often required.

(iv) 1 Water transfer schemes redistribute water from areas of surplus to areas of deficit using pipelines and canals.

2 The building of dams and reservoirs. Multi-purpose schemes provide water for irrigation, and industrial and domestic uses. They also produce hydro-electric power and allow flood control.

3

(a) The vast majority of Commonwealth member nations were former territories of the British Empire. It is a group of 56 countries which work together on issues such as democracy, trade, the environment, climate change, and gender equality.

(b) 1 The United Nations (UN) is the world's largest international organisation, which aims to maintain international peace and international cooperation between its 193 members.

2 The UK is a founding member of the North Atlantic Treaty Organisation (NATO) whose 30 members have agreed to protect each other should any of them be invaded by another country.