AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	coal oil natural gas		1 1 1	AO1 5.10.1.1
01.2	**one** from: • reduce the use of plastic in the manufacture of products • recycle plastic products • reuse plastic products (or use alternatives)		1	AO1 5.10.2.2
01.3	development that meets the needs of current generations without compromising the ability of future generations to meet their own needs		1	AO1 5.10.1.1
02.1	water that is safe to drink		1	AO1 5.10.1.2
02.2	filtering – remove objects such as leaves and twigs sterilisation – kill harmful microbes		1 1	AO1 5.10.1.2
02.3	chlorine/ozone/UV light		1	AO1 5.10.1.2
02.4	green	accept orange	1	AO1 5.4.2.4
02.5	desalination	accept distillation or reverse osmosis	1	AO1 5.10.1.2

AQA GCSE Science Combined Foundation

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Question	Answers	Extra information	Mark	AO / Specification reference
03.1	crushing and melting the jar to make a bottle		1	AO2 5.10.2.2
03.2	SiO_2 $CaCo_3$ sodium carbonate		1 1 1	AO2 5.1.1.1
03.3	reduced use of raw materials/less mining reduced use of energy/less carbon dioxide made reduced waste/less landfill		1 1 1	AO1 5.10.2.2
04.1	organic matter harmful microbes		1 1	AO1 5.10.1.3
04.2	screening and grit removal (filtering) sedimentation to make sewage sludge and effluent anaerobic digestion of sludge aerobic biological treatment of effluent		1 1 1 1	AO1 5.10.1.3
04.3	groundwater has smaller amounts of impurities in it/groundwater contains less organic matter and harmful microbes		1	AO1 5.10.1.3
05.1	universal indicator **or** pH paper **or** universal indicator paper		1	AO1 5.4.2.4
05.2	seven		1	AO1 5.4.2.4

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05.3	salts dissolved in the water		1 1	AO1 5.10.1.2
05.4	sample was not pure		1	AO2 5.10.1.2
05.5	$\frac{8}{100}$ 8%		1	AO2 5.10.1.2
05.6	no pure water contains only water molecules portable water has dissolved salts in it		1 1 1	AO1 5.10.1.2
06.1	it may have harmful substances in it (so must not be consumed)		1	AO2 5.10.1.3
06.2	**two** from: • sewage passes through a metal grid that filters out large objects • sewage is left so that solid settles out of the liquid and sinks to the bottom. • bacteria is added to sediment/sludge that digests (organic) matter anaerobically • bacteria added to liquid and break down any matter by aerobic respiration	One mark for each correct answer up to a maximum of two marks	2	AO1 5.10.1.3

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06.3	less energy used/less carbon dioxide made less chemicals needed to clean the water less water removed from stores (ground water/sea water)		1 1 1	AO3 5.10.1.3
07.1	**Level 3:** Student lists the source of all three materials. Each material has at least one accompanying statement about the availability or processes involved in extracting/processing that material.		5-6	AO3 5.10.2.1
	Level 2: Student lists the source of all three materials. Some statements on the availability or processes involved in extracting/processing that material, but not provided for every material or statements given are vague and incomplete.		3-4	
	Level 1: Some sources of the materials provided. Any statements given are vague, incomplete, or inaccurate.		1-2	
	No relevant content.		0	

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	Indicative content: • sewage passes through a metal grid that filters out large objects • glass bottles are produced from sand (and calcium carbonate and sodium carbonate) • sand is widely available • lots of energy needed to heat sand • plastic (bottles) is made from crude oil • this is a finite resource • crude oil is in high demand • crude oil and plastics have associated environmental issues/description of environmental issues • aluminium (cans) extracted from metal ores • high cost of electricity for extraction/lots of carbon dioxide made • metals are a finite resource/mining damages habitats			

AQA GCSE Science Combined Foundation

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Question	Answers	Extra information	Mark	AO / Specification reference
07.2	student A **one** from: • better to recycle metals and plastics as they are finite resources • recycling uses less energy than producing bottles and cans from the raw material student B **one** from: • recycling still uses lots of energy whereas reusing requires no energy/very little energy • recycling requires objects to be separated correctly by the public	marks are awarded for justification, **not** for choosing Student A or B. accept a justified mixed answer, for example: student A for metals and glass, and student B for plastics because metals and glass can be recycled multiple times without the material degrading, whereas plastics degrade when recycled. accept other sensible answers.	1	AO3
07.3	**one** from: • transporting bottles/cans from factory to shops • waste products released in the manufacture of the bottles/cans • transporting raw material to factory	accept other sensible answers	1	AO2 5.10.2.1
07.4	biased/misleading		1	AO3 5.10.2.1
08.1	crude oil is a finite resource/causes pollution		1	AO1 5.10.1.1

AQA GCSE Science Combined Foundation

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08.2	decreasing from 7.5 billion in 2015 to under one billion in 2018		1 1	AO3 5.10.1.1
08.3	**Level 3:** Advantages and disadvantages are described for both types of bag. A judgement is given with a detailed justification made. The writing is clear, coherent and logical.		5-6	5.10.2.1
	Level 2: An advantage and a disadvantage of more than one type of bag is described. A judgement is given with some justification made. The writing is mainly clear, although the structure may lack logic.		3-4	
	Level 1: 1: An advantage or disadvantage is described. The writing lacks clarity, coherence and logic.		1-2	
	No relevant content.		0	

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	Indicative content: plastic bags – good points • cheap • light • strong • can be recycled plastic bags – bad points • goes to landfill • break easily • single use canvas bags – good points • can be used multiple times • strong • not going to landfill canvas bags – bad points • more expensive • need to remember to bring them	must be balanced between the four areas and have a justified opinion to get full marks		
09.1	use a pipette instead of a beaker to measure the volume of water more accurately		1 1	AO3 5.10.1.2
09.2	wear eye protection do not touch hot apparatus		1 1	AO3 5.10.1.2

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09.3	A		1	AO3 5.10.1.2
09.4	C greatest mass of dissolved solids/salts		1 1	AO2 AO3 5.10.1.2
10.1	top – 3rd 2nd – 2nd 3rd – 4th 4th - top		1 1 1 1	AO1 5.7.1.1
10.2	alkanes		1	AO1 5.7.1.1
10.3	C_nH_{2n+2}		1	AO1 5.7.1.1
10.4	viscosity increases as the size of the molecules increases		1	AO1 5.7.1.1
11.1	C		1	AO2 5.8.1.1 5.8.1.2 5.8.1.3 5.8.1.4

AQA GCSE Science Combined Foundation

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Question	Answers	Extra information	Mark	AO / Specification reference
11.2	B		1	AO2 5.8.1.1 5.8.1.2 5.8.1.3 5.8.1.4
11.3	gas being tested for: carbon dioxide/CO_2 observation: will not turn cloudy/no change explanation: CO_2 is not made/H_2 is made		1 1 1	AO3 5.8.1.1 5.8.1.2 5.8.1.3 5.8.1.4
12.1	profile X		1	AO1 5.5.1.2
12.2	activation energy		1	AO1 5.5.1.2
12.3	A: products B: reagents C: progress of reaction		1 1 1	AO1 5.5.1.2