AQA GCSE Science Combined Foundation

Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
01.1	gas A = nitrogen gas B = oxygen		1 1	AO2 5.9.1.1
01.2	$\frac{76}{360} \times 100$ = 21%		1 1	AO2 5.9.1.1
01.3	**one** from: • carbon dioxide • water vapour • Noble Gases (e.g., argon, neon)		1	AO1 5.9.1.1
01.4	third image		1	AO2 5.9.1.2
01.5	**Level 3:** The descriptions are detailed and accurate. The reasons given are clear and coherent.		5-6	AO1 5.9.1.2 5.9.1.3 5.9.1.4
	Level 2: The descriptions are correct, although lacks detail. Reasons are given for some, although these may not be clearly explained.		3-4	
	Level 1: The descriptions lack clarity and coherence.		1-2	
	No relevant content.		0	

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	Indicative content • from around 2.7 billion years ago, algae and plants produce oxygen • by photosynthesis • oxygen in the atmosphere increases for one billion years • carbon dioxide + water → glucose + oxygen • carbon dioxide removed from atmosphere by photosynthesis • carbon dioxide involved in formation of sedimentary rocks • carbon dioxide involved in formation of fossil fuels • when oceans formed, carbon dioxide dissolved in them • volcanoes released nitrogen (or bacteria produced nitrogen) • nitrogen is unreactive so built up in the atmosphere			
02.1	carbon dioxide methane water vapour		1 1 1	AO1 5.9.2.1
02.2	short reflected long long/warms	answers must be in this order	1 1 1 1	AO1 5.9.2.1

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02.3	**one** from: • cattle farming • rice farming/rice plantations • burning fossil fuels • deforestation		1	AO1 5.9.2.2
03.1	points plotted correctly line of best fit drawn		1 1	AO2 AO3 5.9.3.1
03.2	average concentration of carbon dioxide in the atmosphere increases with time		1	AO3 5.9.3.1
03.3	• burning more fossil fuels • releases more carbon dioxide into the atmosphere/carbon dioxide that was trapped in the fossils • deforestation • less trees to remove carbon dioxide from the atmosphere	accept other sensible answers that specifically relate to carbon dioxide in the atmosphere	1 1 1 1	
04.1	oxides of nitrogen		1	AO1 5.9.3.1
04.2	incomplete combustion		1	AO1 5.9.3.1

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04.3	$2C_4H_{10} + 9O_2 \rightarrow 8CO + 10H_2O$	accept $C_4H_{10} + 4.5O_2 \rightarrow 4CO + 5H_2O$	1	AO2 5.7.1.3 5.9.3.1
04.4	oxides of nitrogen – breathing problems carbon monoxide – poisoning humans particulates – global dimming		1 1 1	AO1 5.9.3.2
04.5	sulfur dioxide	accept oxides of nitrogen	1	AO1 5.9.3.2
05.1	carbon particulates – C sulfur dioxide – CO nitrogen oxides – NO_x blank – SO_2		3	AO1 5.9.3.2
05.2	oxides of nitrogen (or NO_x), nitrogen sulfur dioxide, sulfur carbon particulates		1 1 1	AO1 5.9.3.1
05.3	sulfur dioxide – acid rain nitrogen oxides – breathing problems/acid rain carbon particulates – global dimming		1 1 1	AO1 5.9.3.2
05.4	carbon monoxide is poisonous it is colourless and odourless, which makes it hard to notice		1 1	AO1 5.9.3.2

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06.1	a gas that contributes to atmospheric warming		1	AO1 5.9.2.1
06.2	methane/water vapour		2	AO1 5.9.2.1
06.4	**one** from: • sea levels rising – coastal/low-lying areas where people live flooded/become uninhabitable • increase in extreme weather events – loss of life; damage to property/infrastructure/places where people live; economic effects of rebuilding/repairing • changes to the amount and time of rainfall – cause drought and/or flooding; affect growth of crops • changes to ecosystems and habitats – decrease in food availability • polar ice caps melting – cause rising sea levels/flooding of habitats	one mark for effect one mark for relevant explanation accept any other sensible answers	2	AO1 AO3 5.9.2.3
07.1	the amount of greenhouse gases put into the atmosphere by activity		1	AO1 5.9.2.4
07.2	$100 \times 120 = 12\,000$ g 1.2×10^4		1 1	AO2 5.9.2.4
07.3	$\frac{1.2 \times 10^4}{2} = 6000$	accept answer if given in correct standard form 6×10^3	1	AO2 5.9.2.4

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Practice answers

Question	Answers	Extra information	Mark	AO / Specification reference
07.4	1050 × 120 = 126 000 $\frac{126000}{25}$ = 5040		1 1	AO2 5.9.2.4
07.5	less less carbon dioxide released per person than by car		1 1	5.9.2.4
07.6	methane		1	AO1 5.9.2.4
07.7	planting trees/carbon capture and storage	answers must be ways that offset carbon footprint, not ways that decrease it. accept any other sensible answers	1	AO3 5.9.2.4
08.1	carbon dioxide – very small amounts oxygen – $\frac{1}{5}$ nitrogen – $\frac{4}{5}$	one mark for two correct answers two marks for three correct answers	2	AO1 5.9.1.1
08.2	**two** from: • lots of carbon dioxide • little oxygen • little nitrogen	one mark for each correct answer up to a maximum of two marks	2	AO1 5.9.1.2
08.3	photosynthesis		1	AO1 5.9.1.3
08.4	condensed dissolved		1 1	AO1 5.9.1.2

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Question	Answers	Extra information	Mark	AO / Specification reference
08.5	volcanoes (or bacteria)		1	AO1 5.9.1.2
09.1	no direct observations (because so long ago)		1	AO1 5.9.1.2
09.2	**Level 3 (5-6 marks):** The descriptions of the explanations are detailed and accurate. The reasons given are clear and coherent.		5-6	AO1 5.9.1.2 5.9.1.3 5.9.1.4
	Level 2 (3-4 marks): The descriptions of the explanations are correct, although lacks detail. Reasons are given for some, although these may not be clearly explained.		3-4	
	Level 1 (1-2 marks): The descriptions of the explanations and reasons lacks clarity and coherence.		1-2	
	No relevant content.		0	

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Question	Answers	Extra information	Mark	AO / Specification reference
	Indicative content: carbon dioxide • percentage of carbon dioxide has decreased • water vapour from volcanoes condensed to form oceans • carbon dioxide dissolved in the oceans • removed during formation of fossil fuels • removed during formation of sedimentary rocks • removed during photosynthesis oxygen • percentage of oxygen increased • algae and plants first produced oxygen by photosynthesis • about 2.7 million years ago • as more algae and plants grew, the percentage of oxygen in the atmosphere increased			
09.3	methane carbon dioxide	accept other correct answers	1 1	AO1 5.9.2.2
09.4	global climate change	accept an effect of global climate change, e.g., rising sea levels, more extreme weather, changes in rainfall, changes to ecosystems, polar ice caps melting	1	AO1 5.9.2.2
10.1	20%		1	AO1 5.9.1.1

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10.2	algae and plants living 2.7 billion years ago began to photosynthesise carbon dioxide + water ⟶ glucose + oxygen		1 1 1	AO1 5.9.1.3
10.3	glowing splint inserted into test tube splint relights is oxygen is present		1 1	AO1 5.8.2.2
10.4	photosynthesis/formation of sedimentary rocks/formation of fossil fuels/dissolved in oceans		1	AO1 5.9.1.4
11.1	chromatography		1	AO1 5.8.1.3
11.2	C it has two spots		1 1	AO2 5.8.1.3
11.3	D		1	AO3 5.8.1.3
11.4	drew start line in pen		1	AO3 5.8.1.3