OCR GCSE GATEWAY CHEMISTRY A · J248

CHEMISTRY



MARK SCHEME

WS1.1 DEVELOPMENT OF SCIENTIFIC THINKING

SCORE	PERCENTAGE
/20	%

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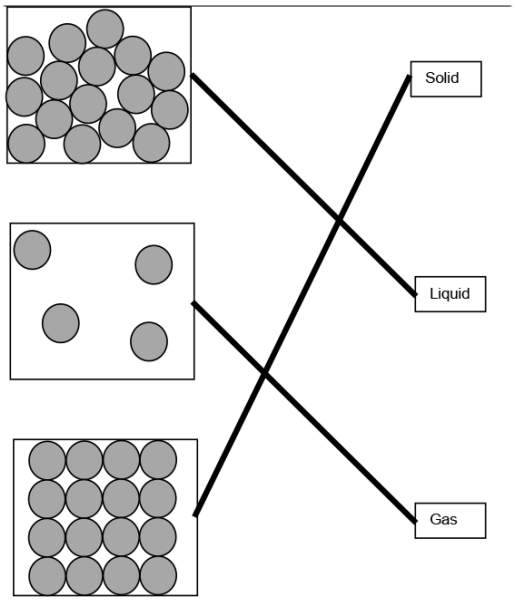
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Question			Answer/Indicative content	Marks	Guidance
1		i		2 (AO2 × 1.1)	All correct = 2 marks 1 or 2 correct = 1 mark If more than one line drawn to state of matter **DO NOT** award the mark.
		ii	**Any one from:** The particles remain the same / No new substance is made ✓ The (changed) arrangement of the particles can be reversed / The change is reversible ✓	1 (AO1.1)	**ALLOW** the particles **only** gain or lose energy
			Total	**3**	
2	a		**Any two from:** In order of (Increasing) atomic mass / weight ✓ In groups showing similar chemical properties ✓ Left gaps for elements that had not been discovered ✓	2 (AO1.1)	**ALLOW** (increasing) mass number **IGNORE** just in order of mass
	b	i	Germanium ✓	1 (AO3.1a)	

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Question			Answer/Indicative content	Marks	Guidance
		ii	Idea of similar atomic mass / 72.6 is closest to 72 / closest atomic mass ✓ Idea of similar density / 5.35 is closest to 5.5 / closest density ✓	2 (AO3.2a)	**ALLOW** (Relative) atomic mass of 72.6 is very close to 72 **IGNORE** just atomic masses are 72 and 72.6 **ALLOW** density of 5.35 is very close to 5.5 **IGNORE** just densities are 5.35 and 5.5 **IGNORE** comments about melting point or colour If no marks awarded **ALLOW** 1 for density and relative atomic mass and not melting point
			Total	2	
3			D ✓	1 (AO1.1)	
			Total	1	

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Question			Answer/Indicative content	Marks	Guidance
4	a		**Any two from:** In order of (increasing) atomic mass / weight ✓ In groups showing similar <u>chemical</u> properties ✓ Left gaps for elements that had not been discovered ✓	2 (AO1.1)	**ALLOW** (increasing) mass number **IGNORE** just in order of mass
	b	i	Germanium ✓	1 (AO3.1a)	
		ii	Idea of similar atomic mass / 72.6 is closest to 72 / closest atomic mass ✓ Idea of similar density / 5.35 is closest to 5.5 / / closest density ✓	2 (AO2×3.2 a)	**ALLOW** (Relative) atomic mass of 72.6 is very close to 72 **IGNORE** just atomic masses are 72 and 72.6 **ALLOW** density of 5.35 is very close to 5.5 **IGNORE** just densities are 5.35 and 5.5 **IGNORE** comments about melting point or colour If no marks awarded, **ALLOW** 1 for density and relative atomic mass and not melting point
			Total	**5**	

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Question			Answer/Indicative content	Marks	Guidance
5			*Please refer to the marking instructions on page 4 of this mark scheme for guidance on how to mark this question.* **Level 3 (5–6 marks)** Detailed evaluation of the advantages and disadvantages of <u>all</u> of the pH testing kits A-E **AND** Suggested pH kit the farmer should use *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Level 2 (3–4 marks)** Evaluation of the advantages and disadvantages of some of the pH testing kits A-E **OR** Detailed evaluation of the advantages of <u>all</u> of the pH testing kits A-E **OR** Detailed evaluation of the disadvantages of <u>all</u> of the pH testing kits A-E <u>**AND**</u> Suggested pH kit the farmer should use **OR** Detailed evaluation of the advantages and disadvantages of <u>all</u> of the pH testing kits A-E *There is a line of reasoning presented with some structure. The information presented is relevant and supported by some evidence.* **Level 1 (1–2 marks)** Evaluation of the advantages of some of the pH testing kits A-E **OR** Evaluation of the disadvantages of some of the pH testing kits A-E **OR** Evaluation of the advantages and disadvantages of some of the pH testing kits A-E <u>**AND**</u>	6 (AO6 × 3.2a)	**AO3.2a Analyse information and ideas to make a judgement of which pH testing kit the farmer should use** **Advantages** • **A** is one of the least expensive testing kits • **A** changes colour across the pH scale • **A** can be used in acidic and alkaline soils • **D** is the least expensive **Disadvantages** • Idea that **B** and **D** only have two possible colours and therefore cannot tell you the pH • Idea that **C** and **E** don't change colour past pH 7, therefore is no use in alkaline soils • **E** is the most expensive **Choice** • **A** should be used by the farmer

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Question			Answer/Indicative content	Marks	Guidance
			Suggested pH kit the farmer should use. *There is an attempt at a logical structure with a line of reasoning. The information is in the most part relevant.* **0 marks** *No response or no response worthy of credit.*		
			Total	**6**	
6		i	**Any one from:** Burning fossil fuels ✓ Deforestation ✓ Intensive use of fertilisers (by farmers) ✓ Cement manufacture ✓	1 (AO1.1)	**ALLOW** example of burning fossil fuels
		ii	**Any two from:** Global warming / increased temperature of Earth's atmosphere ✓ Melting ice caps ✓ Rising sea levels ✓ Altered weather patterns / extreme weather events ✓ Flooding ✓ Increasing ocean acidity ✓	2 (AO1.1)	**ALLOW** climate change
			Total	**3**	

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