



GCSE MARKING SCHEME

SUMMER 2025

**GCSE
SCIENCE (DOUBLE AWARD) – UNIT 6
PHYSICS
FOUNDATION TIER
3430U60-1**

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

GCSE SCIENCE (DOUBLE AWARD) UNIT 6 – PHYSICS 2**FOUNDATION TIER****SUMMER 2025 MARK SCHEME****GENERAL INSTRUCTIONS**Recording of marks

One tick must equate to one mark (apart from the questions where a level of response mark scheme is applied).

Marking rules

All work should be seen to have been marked.

Marking schemes will indicate when explicit working is deemed to be a necessary part of a correct answer.

Crossed out responses not replaced should be marked.

Credit will be given for correct and relevant alternative responses which are not recorded in the mark scheme.

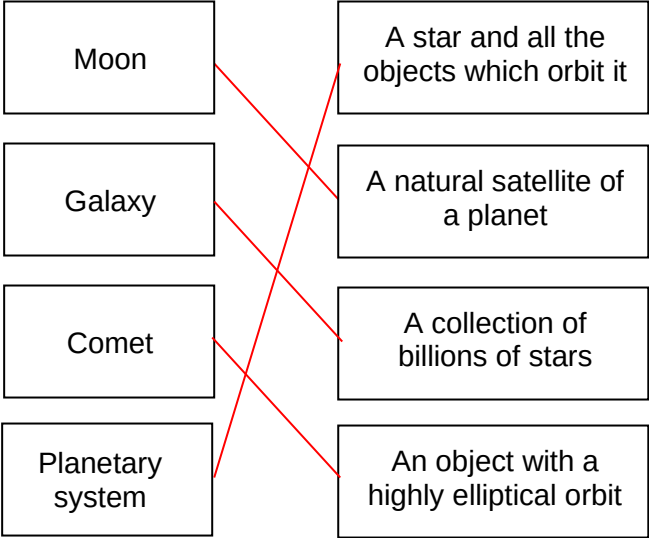
Extended response question

A level of response mark scheme is used. Before applying the mark scheme please read through the whole answer from start to finish. Firstly, decide which level descriptor matches best with the candidate's response: remember that you should be considering the overall quality of the response. Then decide which mark to award within the level. Award the higher mark in the level if there is a good match with both the content statements and the communication statement.

Marking abbreviations

The following may be used in marking schemes or in the marking of scripts to indicate reasons for the marks awarded.

cao	=	correct answer only
ecf	=	error carried forward
bod	=	benefit of doubt

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
1	(a)	(i)		2	1			1		
		(ii)		5, 6, 7 or 8 Award the mark if more than one number given and all are correct	1			1		
		(iii)		4 and 5	1			1		
	(b)			4 correct = 3 marks 2 or 3 correct = 2 marks 1 correct = 1 mark 	3			3		
				Question 1 total	6	0	0	6	0	0

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
2	(a)			em radiation (1) nuclei (1)	2			2		
	(b)	(i)	I	6 [MBq]		1		1		
			II	5 [years]		1		1		
		(ii)		Halving 0.4 at least once i.e. 0.2 (1) Mass = 0.1 [g] (1)		2		2	2	
	(c)			Half-life {stays the same / is 5 years} (1) accept ecf from (b)(i)II Activity doubles (1) accept 24 [MBq]			2	2		
				Question 2 total	2	4	2	8	2	0

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
3	(a)	(i)		4 points plotted correctly to within <1 small square division (2) 3 points plotted correctly to within <1 small square division (1) 2 or less points plotted correctly to within <1 small square division (0) Straight line drawn between 50 and 300 g with a ruler through the points <1 small square division from plotted points (1)		3		3	3	3
		(ii)		Two values of mass or weight chosen from the graph to give a 1:4 ratio e.g. 50 g and 200 g (1) Associated weights or masses identified, 0.5 N and 2.0 N (1) Conclusion given i.e. so agree must be present to award both marks			2	2		2
	(b)	(i)		Weight = 1.5 [N]		1		1		1
		(ii)		Bigger than		1		1		1
		(iii)		Resultant force = $6 - 1.5$ (ecf) = 4.5 [N] For weight ecf greater than 6 N ignore sign in answer		1		1		1
		(iv)		$a = \frac{4.5 \text{ ecf}}{150}$ Selection of correct data (1) Conversion (1) $a = 30 \text{ [m/s}^2\text{]}$ (1) ecf on 4.5 For answers of 3×10^n where $n \neq 1$ award 2 marks		3		3	3	3
	(c)	(i)		Up[wards] don't accept north		1		1		1
		(ii)		Equal to		1		1		1
				Question 3 total	0	11	2	13	6	13

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
4	(a)			A-B Constant acceleration B-C Constant speed D-E Constant deceleration	3			3		
	(b)	(i)		15 (1) $\times 0.6 = 9$ [m] (1)	1	1		2	2	
		(ii)		<u>Thinking distance</u> accept <u>reaction distance</u>	1			1		
		(iii)		Horizontal line from C longer than before (1) Line to the time axis same steepness as before i.e. 10 ± 1 small square from the end of line (1)			2	2		
	(c)	(i)		Mean force = $\frac{135\,000}{1.5}$ (1) Mean force = 90 000 [N] (1)	1	1		2	2	
		(ii)		They increase the {distance / time} [over which the car stops] (1) Reducing the {force / deceleration} (1) Don't accept no force		2		2		
				Question 4 total	6	4	2	12	8	0

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
5				Indicative content: The next stages in the Sun's life cycle is a red giant. Once hydrogen fusion stops helium fusion begins. The gas and radiation pressure become bigger than the gravitational force and the star will expand, becoming a red giant. The next stage in the Sun's life cycle is a white dwarf. When helium fusion stops the inward gravitational force is bigger than the gas and radiation pressure, causing the sun to collapse and form a white dwarf. 5 – 6 marks Describes the life cycle of the Sun and correctly identifies the relation between the forces in the stages it goes through in relation to fusion of elements. <i>There is a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.</i> 3 – 4 marks Good description of 2 out of 3 of: the life cycle of the Sun, forces and fusion or partial description of all 3. <i>There is a line of reasoning which is partially coherent, largely relevant, supported by some evidence and with some structure.</i> 1-2 marks Good description of 1 out of 3 of: the life cycle of the Sun, forces and fusion or partial description of 2. <i>There is a basic line of reasoning which is not coherent, largely irrelevant, supported by limited evidence and with very little structure.</i> 0 marks No attempt made or no response worthy of credit.	6			6		
				Question 5 total	6	0	0	6	0	0

Question				Marking details	Marks Available					
					AO1	AO2	AO3	Total	Maths	Prac
6	(a)	(i)		Granite varies OR {different / more} rocks	1			1		
		(ii)		[F3] has {no / lower / 0-1} [concentration of] radon (1) Radon {segment / portion / percentage} would be less (1) Other [segments] would increase (1) accept a single named segment			3	3	2	
		(iii)		{Decay / radioactivity / radon level} is {random / changeable} (1) So smooths out the {randomness / fluctuations} [over longer time periods] (1) accept makes the result more accurate	1	1		2		2
	(b)	(i)		[Radon emits] alpha [radiation] (1) must be correct context absorbed inside body OR <u>highly</u> ionising (1)	1	1		2		
		(ii)		84 (1) ${}^4_2\text{He}/\alpha$ (1) 83 (1)		3		3	2	
		(iii)		Isotopes	1			1		
		(iv)		Both contain {82 / the same number of} protons (1) Any 2 × (1) from: - They have different numbers of neutrons - They have different {mass / nucleon} numbers - Lead 210 contains 128 neutrons - Lead 214 contains 132 neutrons - Lead 214 has 4 more neutrons so Owain is incorrect – must be present to award all 3 marks			3	3	3	
				Question 6 total	4	5	6	15	7	2

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SUMMARY OF MARKS ALLOCATED TO ASSESSMENT OBJECTIVES

QUESTION	AO1	AO2	AO3	Total	Maths	Prac
1	6	0	0	6	0	0
2	2	4	2	8	2	0
3	0	11	2	13	6	13
4	6	4	2	12	8	0
5	6	0	0	6	0	0
6	4	5	6	15	7	0
Total	24	24	12	60	23	13