GET BETTER AT PHYSICS · MARK SCHEME

HR Diagram & Stellar Evolution: tiered multiple choice

Edexcel IAL Physics · Unit 5 (WPH15) · Specification points 167–168 · 5 questions · 5 marks

1 mark per correct letter | Worked reasoning for every question

How students did = from Pearson examiner reports, where available

Answer key

Q1	Q2	Q3	Q4	Q5
C	B	B	D	B

Easy

Questions 1–5

1 **C**

Main-sequence star becoming a red giant · Edexcel IAL January 2025 · Unit 5 · Q1

When hydrogen in the core runs out, the star's outer layers expand enormously and cool. A red giant has a much larger diameter and a lower surface temperature (red colour) than the main-sequence star.

How students did: Examiners reported that more than 70% of students got this right in January 2025.

2 **B**

A possible main-sequence star · Edexcel IAL October 2024 · Unit 5 · Q8

On the main sequence, cooler stars are less luminous. A star at 4700 K (cooler than the Sun's 5800 K) should have a luminosity less than the Sun's, such as 0.14 L_{Sun}. The other rows put hot stars at low luminosity or cool stars at high luminosity, which are not on the main sequence.

How students did: Examiners reported that at least 60% of students got this right in October 2024.

3 **B**

Evolutionary path on an HR diagram · Edexcel IAL October 2023 · Unit 5 · Q9

P is on the main sequence. When a star leaves the main sequence it swells into a giant or supergiant (top right, S). Its core may finally end as a white dwarf: hot but very dim (bottom left, Q). So P → S → Q.

How students did: Examiners reported that at least 60% of students got this right in October 2023.

4 **D**

Red giant to white dwarf · Edexcel IAL June 2024 · Unit 5 · Q1

A white dwarf is the hot, exposed core of the star after its outer layers are lost. It is tiny compared with the red giant, so its density is far greater, and its surface temperature is much higher (white, not red).

5 **B**

Identifying a cool, dim star · Edexcel IAL June 2024 · Unit 5 · Q7

2700 K is much cooler than the Sun (about 5800 K), so the star is red. A luminosity of only 0.001 L_{Sun} means it is very dim, and so small. Cool, dim and small: a red dwarf.

End of mark scheme. Answers from Pearson's published mark schemes; explanations written for this pack. Pearson Edexcel material is © Pearson Education Ltd. More free packs and 1-to-1 tuition: **www.getbetteratphysics.co.uk**

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