FREE REVISION PACK

HR Diagram & Stellar Evolution

Pearson Edexcel International Advanced Level Physics · Unit 5 (WPH15) · Specification points 167–168

Easy | Multiple choice · past-paper questions

5	5	≈ 10 min
QUESTIONS	TOTAL MARKS	SUGGESTED TIME*

Contents

Q	LEVEL	FOCUS	SOURCE	MARKS
1	Easy	Main-sequence star becoming a red giant	Edexcel IAL January 2025 · Unit 5 · Q1	1 mark
2	Easy	A possible main-sequence star	Edexcel IAL October 2024 · Unit 5 · Q8	1 mark
3	Easy	Evolutionary path on an HR diagram	Edexcel IAL October 2023 · Unit 5 · Q9	1 mark
4	Easy	Red giant to white dwarf	Edexcel IAL June 2024 · Unit 5 · Q1	1 mark
5	Easy	Identifying a cool, dim star	Edexcel IAL June 2024 · Unit 5 · Q7	1 mark

Key ideas to have ready

- HR diagram: luminosity (log scale) against surface temperature (decreasing to the right).
- Main sequence: hotter stars are more luminous.
- Red giants: large, cool, luminous. White dwarfs: small, hot, dim, very dense.
- Typical path: main sequence → red giant → white dwarf.

How to use this pack

1. The questions are grouped into levels (Easy). Work through them in order, and check your answers at the end of each level before moving on.
2. Every question is multiple choice with one correct answer. Write down your working anyway; that is how you find mistakes.
3. The separate mark scheme uses the same numbers and explains every answer.

Levels are based on how students did in Pearson's examiner reports where that information exists, plus our own difficulty rating. *About 1.5 minutes per question.

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Easy

Definitions and one-step ideas. Most students get these right.

Questions 1–5

Choose **one** answer for each question and put a cross in the box next to it.

Edexcel IAL January 2025 · Unit 5 · Q1

1 A main sequence star evolves into a red giant star.

Which row of the table gives the change in diameter and the change in surface temperature when the star evolves?

		Diameter of star	Surface temperature of star
☒	**A**	decreases	decreases
☒	**B**	decreases	increases
☒	**C**	increases	decreases
☒	**D**	increases	increases

Edexcel IAL October 2024 · Unit 5 · Q8

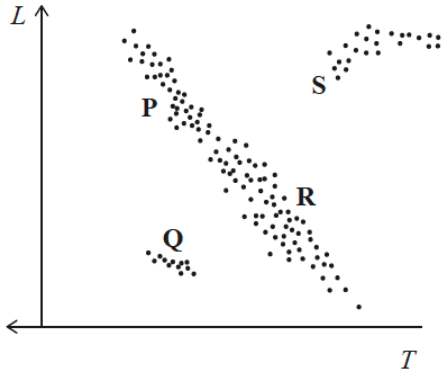
2 Epsilon Indi is a main sequence star.

Which row of the table gives a possible surface temperature and luminosity for Epsilon Indi?

		Surface temperature / K	Luminosity / L_{Sun}
☒	**A**	3000	140
☒	**B**	4700	0.14
☒	**C**	5900	1400
☒	**D**	10 000	0.014

Edexcel IAL October 2023 · Unit 5 · Q9

3 The Hertzsprung-Russell diagram shows four areas **P**, **Q**, **R** and **S**, where different types of stars are located.



Which of the following is a possible evolutionary path for stars initially in area **P**?

☒ **A** **P** → **Q** → **S**

☒ **B** **P** → **S** → **Q**

☒ **C** **P** → **R** → **S**

☒ **D** **P** → **S** → **R**

Edexcel IAL June 2024 · Unit 5 · Q1

4 A red giant star evolves into a white dwarf star.

Which row of the table gives the changes in density and surface temperature as the red giant star evolves into a white dwarf star?

		Density	Surface temperature
☒	**A**	decreases	decreases
☒	**B**	decreases	increases
☒	**C**	increases	decreases
☒	**D**	increases	increases

Edexcel IAL June 2024 · Unit 5 · Q7

5 Wolf 359 is a star with a surface temperature of 2700 K.

The luminosity of the Sun is L_{Sun}.

The luminosity of Wolf 359 is 0.001 L_{Sun}.

Which of the following describes Wolf 359?

☒ **A** blue giant star

☒ **B** red dwarf star

☒ **C** red giant star

☒ **D** white dwarf star

End of questions. Check your answers with the matching mark scheme. More free packs and 1-to-1 tuition:
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