Exam Papers Practice

Fusion & Stars

Question Paper

Course	HL IB Physics
Section	Nuclear & Quantum Physics
Topic	Fusion & Stars
Difficulty	Easy

To be used by all students preparing for HL IB Physics
Students of other boards may also find this useful

Question 1

A nuclide of deuterium ${}^{2}_{1}\mathrm{H}$ and a nuclide of tritium ${}^{3}_{1}\mathrm{H}$ undergo nuclear fusion.

Which statement is not correct about nuclear fusion?

A. For fusion to occur both nuclei must have high kinetic energy

B. The process of fusion absorbs energy

C. Fusion is the combining of two smaller nuclei into a larger nucleus

D. Fusion is the process that powers stars

[1 mark]

Question 2

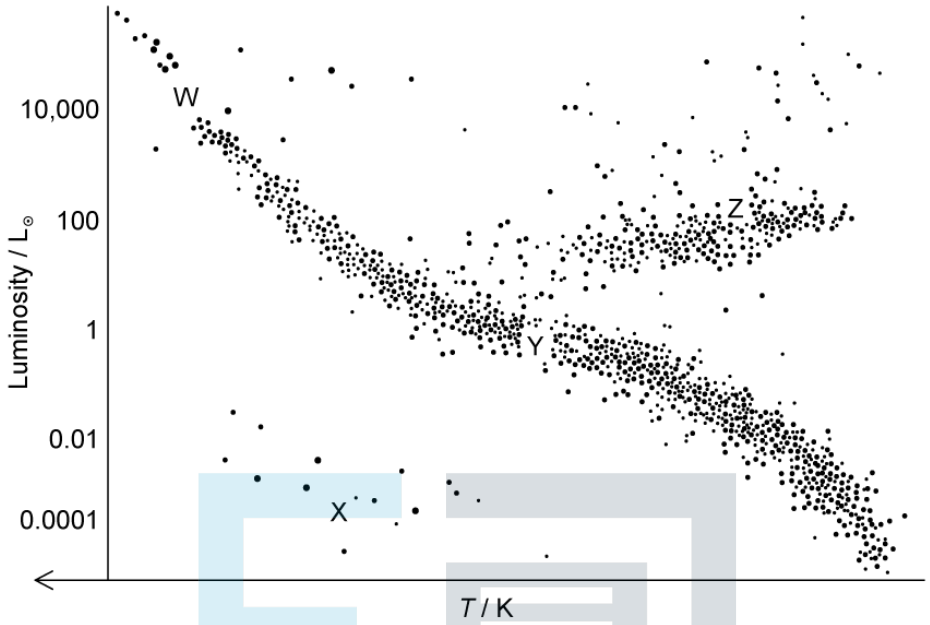
Which row shows the conditions required for fusion to be sustained in the core of a star?

[1 mark]

	Density	Temperature
A.	moderate	very high
B.	moderate	moderate
C.	very high	very high
D.	very high	moderate

Question 3

The letters W, X, Y and Z represent stars at these positions on the diagram.



Which of the following is part of a possible evolutionary path of a star?

A. W → Y

B. X → Y

C. Y → W

D. Y → Z

[1 mark]

Question 4

Which of the following describes the sequence for the evolution of a star of about 10 solar masses?

A. nebula → supernova → protostar → main sequence star → red supergiant → neutron star

B. nebula → planetary nebula → main sequence star → red giant → supernova → white dwarf

C. nebula → protostar → main sequence star → red giant → planetary nebula → white dwarf

D. nebula → protostar → main sequence star → red supergiant → supernova → neutron star

[1 mark]

Question 5

Astronomers measure the parallax angle of two nearby stars. The parallax angle of star X is 3.9×10^{-6} rad and the parallax angle of star Y is 1.6×10^{-7} rad.

What can be deduced about the relative distances of the two stars from these measurements?

A. Star X is closer to Earth than Star Y.

B. Star Y is closer to Earth than Star X.

C. Star X and Star Y are both at a similar distance from Earth.

D. Nothing can be deduced from these measurements alone.

[1 mark]