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Q32

Consider the following statements: Statement-I: Giant stars live much longer than dwarf stars. Statement-II: Compared to dwarf stars, giant stars have a greater rate of nuclear reactions. Which one of the following is correct in respect of the above statements?

(a) Both Statement-I and Statement-II are correct and Statement-I Statement-II explains (b) Both Statement-I and Statement-II are correct, but Statement-II does not explain Statement-I (c) Statement-I is correct, but Statement-II is incorrect (d) Statement-I is incorrect, but Statement-II is correct

Official key: D.

UPSC Civil Services Prelims 2024 · General Studies · 2 marks · Current Affairs and GK

Current events, government schemes, miscellaneous GK - Prelims GS Paper I.

Explanation

(a)

Both correct and II explains I. Giants burn faster and live shorter lives, not longer.

(b)

Both correct but II does not explain I. Statement-I is false.

(c)

I correct, II incorrect. Giants do have higher nuclear rates.

(d) Official key

I incorrect, II correct. Dwarfs live longer; giants have faster fusion.

Summary

Official key is (d). Giant stars are luminous and fuse fuel at a high rate, so they live much shorter lives than dwarf stars of lower mass. Statement-I reverses that. Statement-II is true and explains why giants die young - it does not make I true.

Related possible facts

These can be asked in a future Prelims paper.

Main sequence lifetime

Roughly inversely related to mass; massive stars last millions of years, not billions.

Red giant

Late stage after core hydrogen is exhausted in a sun-like star.

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