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Q76

Which one of the following is a reason why astronomical distances are measured in light-years? (a) Distances among stellar bodies do not change. (b) Gravity of stellar bodies does not change. (c) Light always travels in straight line. (d) Speed of light is always same. Official key: D.

UPSC Civil Services Prelims 2021 · General Studies · 2 marks · Current Affairs and GK
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Explanation

(a)

Distances among stars do not change. They do, slowly.

(b)

Gravity does not change. Irrelevant to the unit.

(c)

Light always in a straight line. Curved by gravity; not the reason for the unit.

(d) Official key

Speed of light is always the same. A constant c makes 'how far light travels in a year' a stable yardstick.

Summary

Official key is (d). A **light-year** is distance = $c \times$ one year. It is useful because the speed of light in vacuum is invariant. Stellar distances, gravity and straight-line travel are not that reason.

Related possible facts

These can be asked in a future Prelims paper.

Light-year

$\sim 9.46 \times 10^{12}$ km.

Parsec

The astronomer's other stick; 3.26 ly.