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Q95

With reference to India's satellite launch vehicles, consider the following statements: 1. PSLVs launch the satellite useful for Earth resources monitoring whereas GSLVs are designed mainly to launch communication satellites. 2. Satellites launched by PSLV appear to remain permanently fixed in the same position in the sky, as viewed from a particular location in Earth. 3. GSLV Mk III is a four-staged launch vehicle with the first and third stages using solid rocket motors; and the second and fourth stages using liquid rocket engines. Which of the statements given above is/are correct? (a) 1 only (b) 2 and 3 (c) 1 and 2 (d) 3 only Official key: A.

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Explanation**(a) Official key**

(a) 1 only. **PSLV** is the workhorse for Earth-observation/remote-sensing satellites in polar/SSO orbits; GSLV (with cryogenic upper stage) is meant mainly for heavier communication satellites to GTO. Statement 1 is therefore correct. Statement 2 describes **geostationary** appearance, which **PSLV** payloads do not have. Statement 3 mis-counts GSLV Mk III: it is a three-stage vehicle (two solid strap-ons + liquid core + cryogenic upper), not four stages as described. Only 1 stands. This option is the official key.

(b)

(b) 2 and 3. Both remaining statements are false. This option is not the key.

(c)

(c) 1 and 2. Statement 1 is true; **PSLV** satellites are not fixed in the sky. This option is not the key.

(d)

(d) 3 only. The four-stage description of Mk III is wrong. This option is not the key.

Summary

Official key is (a) 1 only. **PSLV** launches Earth-resource satellites; GSLV is designed chiefly for communication satellites. A satellite that appears fixed in the sky is in **geostationary** orbit, typically a GSLV/GTO mission, not a **PSLV** polar bird. GSLV Mk III (LVM3) is three-stage, not the four-stage solid-liquid sandwich of statement 3. Hence only statement 1 is correct.

Related possible facts

These can be asked in a future Prelims paper.

PSLV

Polar Satellite Launch Vehicle; four stages; SSO/LEO workhorse

GSLV Mk II

Uses indigenous cryogenic upper stage for GTO

LVM3 / GSLV Mk III

S200 strap-ons, L110 liquid, C25 cryogenic-three stages

Geostationary

~36,000 km; appears fixed over one longitude

IRS / INSAT-GSAT

Typical PSLV vs GSLV payload families

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