

JEE MAIN GRAVITATION — EARTH SATELLITES AND ORBITAL VELOCITY — PYQS

Max. Marks: 12

Questions: 3

Section A (MCQ) — 1 question

Q.1 Given below are two statements :

Statement-I: A satellite is moving around earth in the orbit very close to the earth surface. The time period of revolution of satellite depends upon the density of earth.

Statement-II: The time period of revolution of the satellite is $T = 2\pi\sqrt{\frac{R_e}{g}}$ (for satellite very close to the earth surface), where R_e is radius of earth and g is acceleration due to gravity.

In the light of the above statements, choose the correct answer from the options given below :

[JEE Main 2026 (Online) 22nd January Evening Shift]

- (1) Statement-I is true but Statement-II is false
- (2) Statement-I is false but Statement-II is true
- (3) Both Statement-I and Statement-II are true
- (4) Both Statement-I and Statement-II are false

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Section B (Numerical) — 2 questions

Q.2 Two planets, A and B are orbiting a common star in circular orbits of radii R_A and R_B , respectively, with $R_B = 2R_A$. The planet B is $4\sqrt{2}$ times more massive than planet A. The ratio $\left(\frac{L_B}{L_A}\right)$ of angular momentum (L_B) of planet B to that of planet A (L_A) is closest to integer _____.

[JEE Main 2025 (Online) 29th January Evening Shift]

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Q.3 A satellite of mass $\frac{M}{2}$ is revolving around earth in a circular orbit at a height of $\frac{R}{3}$ from earth surface. The angular momentum of the satellite is $M\sqrt{\frac{GMR}{x}}$. The value of x is _____, where M and R are the mass and radius of earth, respectively. (G is the gravitational constant)

[JEE Main 2025 (Online) 23rd January Evening Shift]

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ANSWER KEY

Section A (MCQ) — 1 question

Ques.	1													
Ans.	3													

Section B (Numerical) — 2 questions

Ques.	2	3												
Ans.	8	3												