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JEE MAIN GRAVITATION — ENERGY OF AN ORBITING SATELLITE, GEOSTATIONARY AND POLAR SATELLITES — PYQS

Max. Marks: 8 **Questions:** 2

Section A (MCQ) — 1 question

Q.1 Initially a satellite of 100 kg is in a circular orbit of radius $1.5R_E$. This satellite can be moved to a circular orbit of radius $3R_E$ by supplying $\alpha \times 10^6$ J of energy. The value of α is _____.
(Take Radius of Earth $R_E = 6 \times 10^6$ m and $g = 10$ m/s^2)

[JEE Main 2026 (Online) 21st January Morning Shift]

(1) 500 (2) 1000 (3) 100 (4) 150

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Section B (Numerical) — 1 question

Q.2 A satellite of mass 1000 kg is launched to revolve around the earth in an orbit at a height of 270 km from the earth's surface. Kinetic energy of the satellite in this orbit is _____ $\times 10^{10}$ J.
(Mass of earth $= 6 \times 10^{24}$ kg, Radius of earth $= 6.4 \times 10^6$ m, Gravitational constant $= 6.67 \times 10^{-11}$ N m^2 kg^{-2})

[JEE Main 2025 (Online) 2nd April Evening Shift]

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ANSWER KEY

Section A (MCQ) — 1 question

Ques.	1										
Ans.	2										

Section B (Numerical) — 1 question

Ques.	2										
Ans.	3										