

JEE MAIN GRAVITATION — ESCAPE SPEED — PYQS

Max. Marks: 16
Questions: 4

Section A (MCQ) — 4 questions

Q.1 If a body of mass 1 kg falls on the earth from infinity, it attains velocity (v) and kinetic energy (k) on reaching the surface of earth. The values of v and k respectively are _____.

(Take radius of earth to be 6400 km and $g = 9.8 \text{ m/s}^2$) [JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) 11.2 km/s; $6.27 \times 10^7 \text{ J}$
 (2) 11.2 km/s; $12.54 \times 10^7 \text{ J}$
 (3) 8.8 km/s; $6.27 \times 10^7 \text{ J}$
 (4) 8.8 km/s; $12.54 \times 10^7 \text{ J}$

Scan or tap for the full solution



Q.2 The escape velocity from a spherical planet A is 10 km/s. The escape velocity from another planet B whose density and radius are 10% of those of planet A, is _____ m/s.

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

- (1) 1000 (2) $200\sqrt{5}$
 (3) $1000\sqrt{2}$ (4) $100\sqrt{10}$

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Q.3 An object is kept at rest at a distance of $3R$ above the earth's surface where R is earth's radius. The minimum speed with which it must be projected so that it does not return to earth is : (Assume $M =$ mass of earth, $G =$ Universal gravitational constant)

[JEE Main 2025 (Online) 4th April Evening Shift]

- (1) $\sqrt{\frac{3GM}{R}}$ (2) $\sqrt{\frac{2GM}{R}}$
 (3) $\sqrt{\frac{GM}{2R}}$ (4) $\sqrt{\frac{GM}{R}}$

Scan or tap for the full solution



Q.4 Earth has mass 8 times and radius 2 times that of a planet. If the escape velocity from the earth is 11.2 km/s, the escape velocity in km/s from the planet will be:

[JEE Main 2025 (Online) 28th January Evening Shift]

- (1) 8.4 (2) 11.2 (3) 5.6 (4) 2.8

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ANSWER KEY

Ques.	1	2	3	4											
Ans.	1	4	3	3											