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JEE MAIN GRAVITATION — GRAVITATIONAL POTENTIAL ENERGY — PYQS

Max. Marks: 12 **Questions:** 3

Section A (MCQ) — 3 questions

Q.1 A body of mass m is taken from the surface of earth to a height equal to twice the radius of earth (R_e). The increase in potential energy will be _____.
(g is acceleration due to gravity at the surface of earth) [JEE Main 2026 (Online) 5th April Evening Shift]

(1) $\frac{1}{2}mgR_e$ (2) $\frac{3}{4}mgR_e$
(3) $\frac{1}{4}mgR_e$ (4) $\frac{2}{3}mgR_e$

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Q.2 Three masses 200 kg, 300 kg and 400 kg are placed at the vertices of an equilateral triangle with sides 20 m. They are rearranged on the vertices of a bigger triangle of side 25 m and with the same centre. The work done in this process is _____ J.
(Gravitational constant $G = 6.7 \times 10^{-11}$ N m^2/kg^2)
[JEE Main 2026 (Online) 24th January Morning Shift]

(1) 4.77×10^{-7} (2) 1.74×10^{-7}
(3) 9.86×10^{-6} (4) 2.85×10^{-7}

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Q.3 Given below are two statements : one is labelled as **Assertion A** and the other is labelled as **Reason R**
Assertion (A): The kinetic energy needed to project a body of mass m from earth surface to infinity is $\frac{1}{2}mgR$, where R is the radius of earth.
Reason (R): The maximum potential energy of a body is zero when it is projected to infinity from earth surface.

In the light of the above statements, choose the correct answer from the options given below
[JEE Main 2025 (Online) 4th April Morning Shift]

(1) A is false but R is true
(2) Both A and R are true and R is the correct explanation of A
(3) A is true but R is false
(4) Both A and R are true but R is NOT the correct explanation of A

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ANSWER KEY

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