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JEE MAIN WORK, ENERGY AND POWER — CONSERVATIVE AND NON-CONSERVATIVE FORCES — PYQS

Max. Marks: 16 **Questions:** 4

Section A (MCQ) — 4 questions

Q.1 Given below are two statements :

Statement-I: An object moves from position r_1 to position r_2 under a conservative force field $\vec{F}$. The work done by the force is $W = -\int_{r_1}^{r_2} \vec{F} \cdot \vec{dr}$.

Statement-II: Any object moving from one location to another location can follow infinite number of paths. Therefore, the amount of work done by the object changes with the path it follows for a conservative force.

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 false

(4) Both Statement-I and Statement-II are true

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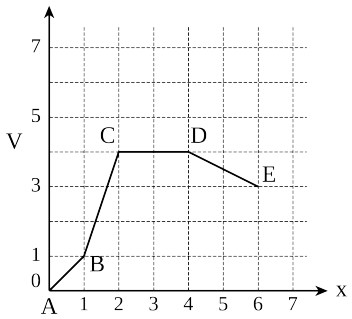
Q.2 Potential energy (V) versus distance (x) is given by the graph. Rank various regions as per the magnitudes of the force (F) acting on a particle from high to low.

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



(1) $F_{BC} > F_{AB} > F_{DE} > F_{CD}$

(2) $F_{BC} > F_{CD} > F_{DE} > F_{AB}$

(3) $F_{CD} > F_{AB} > F_{BC} > F_{DE}$

(4) $F_{CD} > F_{DE} > F_{AB} > F_{BC}$

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Q.3 Which one of the following forces cannot be expressed in terms of potential energy?

[JEE Main 2025 (Online) 7th April Evening Shift]

(1) Frictional force (2) Coulomb's force

(3) Restoring force (4) Gravitational force

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Q.4 Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**

Assertion (A): In a central force field, the work done is independent of the path chosen.

Reason (R): Every force encountered in mechanics does not have an associated potential energy.

In the light of the above statements, choose the most appropriate answer from the options given below

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

(1) A is false but R is true

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

(3) A is true but R is false

(4) Both A and R are true and R is the correct explanation of A

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ANSWER KEY

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