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NEET WORK, ENERGY AND POWER — POTENTIAL ENERGY, POTENTIAL ENERGY OF A SPRING — PYQS

Max. Marks: 32 **Questions:** 8

Section A (MCQ) — 8 questions

Q.1 The potential energy of a long spring when stretched by 2 cm is U. If the spring is stretched by 8 cm, potential energy stored in it will be : [NEET (UG) 2023]

(1) 4U (2) 8U (3) 16U (4) 2U

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Q.2 Two similar springs P and Q have spring constants K_P and K_Q, such that $K_P > K_Q$. They are stretched first by the same amount (case a), then by the same force (case b). The work done by the springs W_P and W_Q are related as, in case (a) and case (b) respectively [AIPMT 2015 (Cancelled)]

(1) $W_P > W_Q$; $W_Q > W_P$ (2) $W_P < W_Q$; $W_Q < W_P$

(3) $W_P = W_Q$; $W_P > W_Q$ (4) $W_P = W_Q$; $W_P = W_Q$

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Q.3 A block of mass M is attached to the lower end of a vertical spring. The spring is hung from a ceiling and has force constant value k. The mass is released from rest with the spring initially unstretched. The maximum extension produced in the length of the spring will be [AIPMT 2009]

(1) 2Mg/k (2) 4Mg/k (3) Mg/2k (4) Mg/k

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Q.4 A vertical spring with force constant k is fixed on a table. A ball of mass m at a height h above the free upper end of the spring falls vertically on the spring so that the spring is compressed by a distance d. The net work done in the process is [AIPMT 2007]

(1) $mg(h+d)-\frac{1}{2}kd^2$ (2) $mg(h-d)-\frac{1}{2}kd^2$

(3) $mg(h-d)+\frac{1}{2}kd^2$ (4) $mg(h+d)+\frac{1}{2}kd^2$

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Q.5 The potential energy of a long spring when stretched by 2 cm is U. If the spring is stretched by 8 cm the potential energy stored in it is [AIPMT 2006]

(1) U/4 (2) 4U (3) 8U (4) 16U

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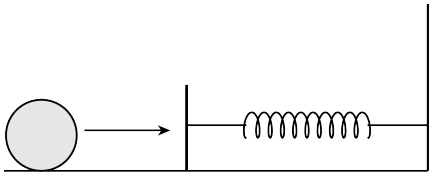
Q.6 A mass of 0.5 kg moving with a speed of 1.5 m/s on horizontal smooth surface, collides with a nearly weightless spring of force constant k = 50 N/m. The maximum compression of the spring would be [AIPMT 2004]



(1) 0.15 m (2) 0.12 m (3) 1.5 m (4) 0.5 m

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Q.7 When a long spring is stretched by 2 cm, its potential energy is U. If the spring is stretched by 10 cm, the potential energy stored in it will be [AIPMT 2003]

(1) U/5 (2) 5U (3) 10U (4) 25U

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Q.8 Two springs A and B having spring constant K_A and K_B ($K_A = 2K_B$) are stretched by applying force of equal magnitude. If energy stored in spring A is E_A, then energy stored in B will be [AIPMT 2001]

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

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ANSWER KEY

Ques.	1	2	3	4	5	6	7	8			
Ans.	**3**	**1**	**1**	**1**	**4**	**1**	**4**	**1**			