AIPMT 2006

1. 300 J of work is done in sliding a 2 kg block up an inclined plane of height 10m. The work done against friction is :-
(take g = 10 m/s^2)
(1) zero (2) 100 J (3) 200 J (4) 300 J

2. A body of mass 3 kg is under a constant force which causes a displacement s in metres in it, given by the relation s = $\frac{1}{3}t^2$, where t is in seconds. Work done by the force in 2 seconds is :-

(1) $\frac{5}{19}$ J (2) $\frac{3}{8}$ J

(3) $\frac{8}{3}$ J (4) $\frac{19}{5}$ J

AIPMT 2009

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

4. An engine pumps water continuously through a hose. Water leaves the hose with a velocity v and m is the mass per unit length of the water jet. What is the rate at which kinetic energy is imparted to water :-

(1) $\frac{1}{2}$ m^2v^2 (2) $\frac{1}{2}$ mv^3

(3) mv^3 (4) $\frac{1}{2}$ mv^2

5. A body of mass 1 kg is thrown upwards with a velocity 20 m/s. It momentarily comes to rest after attaining a height of 18 m. How much energy is lost due to air friction ? (g = 10 m/s^2) :-
(1) 10 J (2) 20 J (3) 30 J (4) 40 J

AIPMT 2010

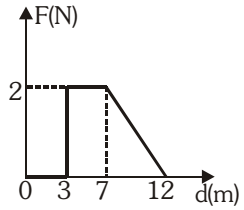
6. An engine pumps water through a hose pipe. Water passes through the pipe and leaves it with a velocity of 2 m/s. The mass per unit length of water in the pipe is 100 kg/m. What is the power of the engine?
(1) 800 W (2) 400 W
(3) 200 W (4) 100 W

AIPMT 2011

7. The potential energy of a system increases if work is done :-
(1) Upon the system by a nonconservative force
(2) By the system against a conservative force
(3) By the system against a nonconservative force
(4) Upon the system by a conservative force

8. A body projected vertically from the earth reaches a height equal to earth's radius before returning to the earth. The power exerted by the gravitational force is greatest :-
(1) At the highest position of the body
(2) At the instant just before the body hits the earth
(3) It remains constant all through
(4) At the instant just after the body is projected

9. Force F on a particle moving in a straight line varies with distance d as shown in the figure. The work done on the particle during its displacement of 12 m is :



(1) 18 J
(2) 21 J
(3) 26 J
(4) 13 J

AIPMT (Pre) 2012

10. The potential energy of a particle in a force field is : $U = \frac{A}{r^2} - \frac{B}{r}$

where A and B are positive constants and r is the distance of particle from the centre of the field. For stable equilibrium, the distance of the particle is :

(1) A/B (2) B/A

(3) B/2A (4) 2A/B

AIPMT (Mains) 2012

11. A car of mass m starts from rest and accelerates so that the instantaneous power delivered to the car has a constant magnitude P_0. The instantaneous velocity of this car is proportional to :-

(1) $t^{-1/2}$ (2) $t/\sqrt{m}$

(3) t^2P_0 (4) $t^{1/2}$

NEET (UG) 2013

12. A uniform force of $(3\hat{i}+\hat{j})$ newton acts on a particle of mass 2kg. Hence the particle is displaced from position $(2\hat{i}+\hat{k})$ meter to position $(4\hat{i}+3\hat{j}-\hat{k})$ meter. The work done by the force on the particle is :-

(1) 15 J (2) 9 J

(3) 6 J (4) 13 J

AIPMT 2015

13. A block of mass 10 kg, moving in x direction with a constant speed of 10 m/s, is subjected to a retarding force F = 0.1x J/m during its travel from x = 20 m to 30 m. Its final KE will be :

(1) 450 J

(2) 275 J

(3) 250 J

(4) 475 J

14. A particle of mass m is driven by a machine that delivers a constant power k watts. If the particle starts from rest the force on the particle at time t is :-

(1) $\sqrt{mk}\,t^{-1/2}$ (2) $\sqrt{2mk}\,t^{-1/2}$

(3) $\frac{1}{2}\sqrt{mk}\,t^{-1/2}$ (4) $\sqrt{\frac{mk}{2}}\,t^{-1/2}$

NEET-I 2016

15. A body of mass 1 kg begins to move under the action of a time dependent force $\vec{F}=(2t\,\hat{i}+3t^2\hat{j})N$, where $\hat{i}$ and $\hat{j}$ are unit vectors along x and y axis. What power will be developed by the force at the time t ?

(1) $(2t^2 + 3t^3)W$ (2) $(2t^2 + 4t^4)W$

(3) $(2t^3 + 3t^4)W$ (4) $(2t^3 + 3t^5)W$

NEET-II 2016

16. A particle moves from a point $(-2\hat{i}+5\hat{j})$ to $(4\hat{j}+3\hat{k})$ when a force of $(4\hat{i}+3\hat{j})$ N is applied. How much work has been done by the force ?

(1) 5 J (2) 2 J

(3) 8 J (4) 11 J

NEET(UG) 2017

17. Consider a drop of rain water having mass 1 g falling from a height of 1 km. It hits the ground with a speed of 50 m/s. Take 'g' constant with a value 10 m/s^2. The work done by the (i) gravitational force and the (ii) resistive force of air is :-

(1) (i) 1.25 J (ii) – 8.25 J

(2) (i) 100 J (ii) 8.75 J

(3) (i) 10 J (ii) – 8.75 J

(4) (i) – 10 J (ii) – 8.25 J

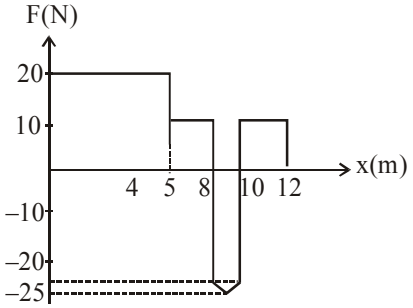
NEET(UG) 2019

18. A force F = 20 + 10y acts on a particle in y-direction where F is in newton and y in meter. Work done by this force to move the particle from y = 0 to y = 1 m is :

(1) 30 J (2) 5 J (3) 25 J (4) 20 J

NEET(UG) 2019 (Odisha)

19. An object of mass 500g, initially at rest acted upon by a variable force, whose X component varies with x in the manner shown. The velocities of the object at point X = 8 m and X =12 m, would be the respective values of (nearly)



(1) 18 m/s and 24.4 m/s

(2) 23 m/s and 24.4 m/s

(3) 23 m/s and 20.6 m/s

(4) 18 m/s and 20.6 m/s

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**2**	**3**	**3**	**2**	**2**	**1**	**2**	**2**	**4**	**4**	**4**	**2**	**4**	**4**	**4**
Que.	16	17	18	19											
Ans.	**1**	**3**	**3**	**3**											