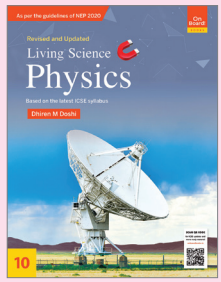
ICSE Living Science PHYSICS

Class 10

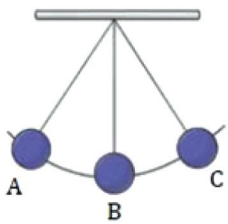


Multiple-Choice Questions

Chapter 2: WORK, ENERGY, POWER

1. The work done by a force on a body will be positive if the
   (a) body does not move.
   (b) body moves perpendicular to the direction of the applied force.
   (c) body moves along the direction of the applied force.
   (d) body moves opposite to the direction of the applied force.
   Ans: (c)

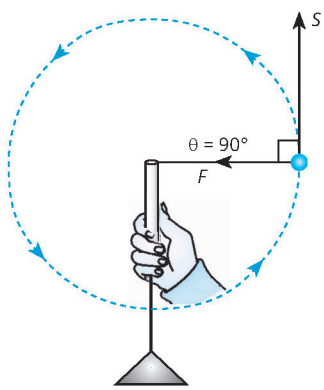
2. A pendulum is oscillating. The bob of the pendulum has
   (i) maximum potential energy at its mean position B.
   (ii) maximum kinetic energy at the extreme positions A and C.
   (iii) maximum kinetic energy at its mean position B.
   (iv) maximum potential energy at the extreme positions A and C.



   Choose the correct option.
   (a) (i) and (ii) (b) (ii) and (iii) (c) (iii) and (iv) (d) (i) and (iv)
   Ans: (c)

3. A ball of mass m is thrown vertically up with an initial velocity so as to reach a height h. Which of the following statements is correct about it?
   (a) Potential energy of the ball at the ground is mgh.
   (b) Kinetic energy imparted to the ball at the ground is zero.
   (c) Kinetic energy of the ball at the highest point is mgh.
   (d) Potential energy of the ball at the highest point is mgh.
   Ans: (d)

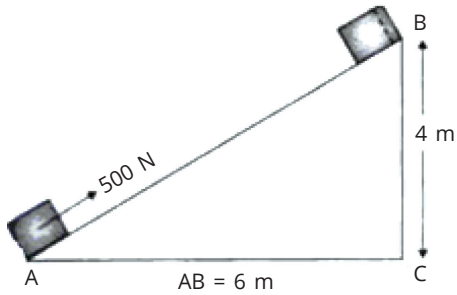
4. Look at the picture and choose the incorrect option/s.



   (a) Force applied along the string is a centripetal force.
   (b) Force applied is perpendicular to the displacement.
   (c) Work done by the force applied along the string
   $$W = F\,S\cos 90° = 0$$
   (d) The force applied along the string is centrifugal force and the work done by it is zero.
   Ans: (d)

5. Work done by the force of gravity on a body moving upwards is
   (a) positive. (b) negative. (c) zero. (d) a constant.
   Ans: (b)

6. A force of 500 N is required to pull up a body of mass 20 kg through a distance of 6 m along the inclined plane. Based on this information and the figure given below, answer the following questions. (g = 10 m/s^2)



(A) The work done by the force in pulling the body along the inclined plane is

(a) 1000 J (b) 2000 J (c) 3000 J (d) 4000 J

Ans: (c)

(B) The energy gained by the body or the work done against the force of gravity is

(a) 600 J (b) 800 J (c) 1000 J (d) 2000 J

Ans: (b)

(C) If the body takes 30 seconds to reach the point B, the power developed by the body is

(a) 100 W (b) 200 W (c) 300 W (d) 400 W

Ans: (c)

7. 1 horse power is equal to

(a) 746 W (b) 756 W (c) 786 W (d) 726 W

Ans: (a)

8. Earth has lot of energy stored in it. This energy is called

(a) Thermal energy. (b) Geothermal energy. (c) Hydro energy. (d) Mechanical energy.

Ans: (b)

9. The work done by a weight of 1 kg mass when it moves up through 1 m is

(a) 10 J (b) –10 J (c) 0.1 J (d) –0.1 J

Ans: (b)

10. A boy weighing 200 N climbs a vertical ladder. If the value of g be 10 ms^{-2}, the work done by the boy in climbing 2 m height will be

(a) 200 J (b) 20 J (c) 100 J (d) 400 J

Ans: (d)

11. Two bodies of masses m and 2m are raised to the heights of h and 2h respectively. What is the ratio of their gravitational potential energies?

(a) 1 : 2 (b) 1 : 3 (c) 1 : 4 (d) 2 : 3

Ans: (c)

12. The momentum of a bullet of mass 20 g fired from a gun is 10 kg·m/s. The kinetic energy of this bullet in kJ will be

(a) 1.5 (b) 2 (c) 2.5 (d) 3

Ans: (c)

13. When a force of 1 newton moves a body through a distance of 1 metre in the direction of force, the work done is

(a) 1 joule (b) 1 Nm (c) 1 Nm^2 (d) both (a) and (b)

Ans: (d)

14. When the angle between the direction of force and the direction of displacement is an acute angle, the nature of work done is

(a) positive.
(b) negative.
(c) either positive or negative.
(d) zero.

Ans: (a)

15. Energy transformation in a television is from

(a) electrical energy to sound energy.
(b) electrical energy to light and sound energy.
(c) electrical energy to light energy.
(d) electrical energy to chemical energy.

Ans: (b)

16. A body falls freely under gravity from rest. What kind of energy it will possess on reaching the ground?

(a) Potential energy
(b) Potential and kinetic energy
(c) Kinetic energy
(d) Gravitational energy

Ans: (c)

17. The work done on an object does not depend on the

(a) displacement.
(b) force applied.
(c) angle between force and displacement.
(d) initial velocity of the object.

Ans: (d)

18. A man has four options to move a body through a height. In which case is maximum work done?

(a) Push over an inclined plane.
(b) Lift vertically upwards.
(c) Push over smooth rollers.
(d) Push on a plane horizontal surface.

Ans: (c)