

Class - XI

Chapter – Work, Power & Energy

Date – 09.07.20



 $1 \times 15 = 15$ 

Topic – Work- Energy theorem

Choose the correct option for the following questions.

- 1. Work done by one external force depends on
  - a. The force
  - b. The displacement
  - c. The angle between the force and displacement
  - d. All of the above
- 2. For conservative force
  - a. Work done is constant
  - b. Work done is path dependent.
  - c. Work done is path independent
  - d. None of these
- 3. If a person walks on the horizontal road, then the work done by the person against gravity is
  - a. Zero
  - b. Infinite
  - c. Dependent on his mass
  - d. None of these
- 4. The energy that can be positive only is
  - a. Kinetic energy
  - b. Potential energy
  - c. Mechanical energy
  - d. Both KE and PE
- 5. The total work done on a particle is equal to the change in its kinetic energy
  - a. Always
  - b. Only if the force is constant
  - c. Only in the inertial frame
  - d. Only for no external force acting on it.
- 6. Work done by static frictional force
  - a. Can be positive
  - b. Can be negative
  - c. Can be zero
  - d. All of these

7. Work done when a force  $\vec{F} = \hat{i} + 2\hat{j} + 3\hat{k}$  N acts on a particle to take it from the point  $\hat{i} + \hat{j} + \hat{k}$  to  $\hat{i} - \hat{j} + 2\hat{k}$  is

a. – 3J

\_

- b. -1J
- c. Zero
- d. 2J

- 8. A particle moves along the x-axis from x=0 to x=5 under the influence of force  $F = 7 2x + 3x^2$ . The work done in the process is
  - a. 360J
  - b. 85J
  - c. 185J
  - d. 135J

9. Under the action of a force , a 2kg body moves such that its position x as a function of time given by  $x = \frac{t^3}{3}$  where x is in metre and t is in sec. the work done by the force for first 2seconds is –

- a. 1600 J
- b. 160J
- c. 16J
- d. 1.6J
- 10. The kinetic energy of a projectile at its highest point is K. If the range of the projectile is four times the height of the projectile, then the initial kinetic energy is
  - a.  $\sqrt{2}K$
  - b. 2K
  - c. 4K
  - d.  $2\sqrt{2}K$
- 11. A block of mass 10kg is moving in x direction with constant speed of 10m/s. it is subjected to a retarding force F = 0.1x J/m during its travel from x=20m to x=30m. its final kinetic energy will be
  - a. 475J
  - b. 450J
  - c. 275J
  - d. 250J
- 12. A ball of mass 12kg and another of 6kg are dropped from a 60feet tall building. After a fall of 30 feet each, towards earth, their kinetic energies will be in the ratio
  - a.  $\sqrt{2}:1$
  - b. 1:4
  - c. 2:1
  - d.  $1:\sqrt{2}$
- 13. A body has kinetic energy E when projected at angle of projection for maximum range. Its kinetic energy at the highest point will be
  - a. E
  - b. E/2
  - c. E/3
  - d. Zero
- 14. if the kinetic energy of a body is doubled, then its linear momentum will be
  - a. 4times
  - b. Doubled
  - c.  $\sqrt{2}$  times
  - d. Unchanged
- 15. The minimum stopping distance of a car moving with velocity v is x. if the car is moving with velocity 2v, then the minimum stopping distance is
  - a. 2x
  - b. 4x
  - c. 3x
  - d. X