St. Lawrence High School

A Jesuit Christian Minority Institution

Term : 1st

Solution of Work Sheet – 21

Class – XI | Subject – Physics | Date – 09.07.20

Chapter – Work, Power & Energy | Topic – Work- Energy theorem

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Choose the correct option for the following questions. $1 \times 15 = 15$

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 $\vec{F} = \hat{\imath} + 2\hat{\jmath} + 3\hat{k}$ N acts on a particle to take it from the point $\hat{\imath} + \hat{\jmath} + \hat{k}$ to $\hat{\imath} - \hat{\jmath} + 2\hat{k}$ 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