St. Lawrence High School

A Jesuit Christian Minority Institution

Term : 1st

Work Sheet – 24

Class – XI | Subject – Physics | Date – 18.07.20

Chapter – Work, Power & Energy | Topic – Collisions

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

1. Total linear momentum remains conserved for –
   a. Elastic collisions
   b. In-elastic collisions
   c. Partially elastic collision
   d. All of above
2. The kinetic energy of the system remains conserved for –
   a. Elastic collisions
   b. In-elastic collisions
   c. Partially elastic collision
   d. All of above
3. The coefficient of restitution (e) is 1 for –
   a. Elastic collisions
   b. In-elastic collisions
   c. Partially elastic collision
   d. All of above
4. For perfectly in-elastic collision, $e =$
   a. 0
   b. 1
   c. – 1
   d. Depends on the relative velocity before collision
5. A body is dropped from a height h. when the loss in potential energy is U, then its velocity is v. the mass of the body is –
   a. $\frac{U^2}{2v}$
   b. $\frac{2v}{U}$
   c. $\frac{2v}{U^2}$
   d. $\frac{2U}{v^2}$
6. A ball of mass 1kg is released from a tower. The kinetic energy generated in it after falling through 10m will be
   a. 10J
   b. 9.8J
   c. 0.98J
   d. 98J
7. A stone is projected vertically up to reach maximum height h. the ratio of its kinetic energy to potential energy at a height $\frac{4h}{5}$ will be –
   a. 5:4
   b. 4:5
   c. 1:4
   d. 4:1

8. A block of mass 16kg is moving on a frictionless horizontal surface with velocity 4m/s and comes to rest after pressing a spring. If the force constant of the spring is 100N/m then the compression in the spring will be –
   a. 3.2m
   b. 1.6m
   c. 0.6m
   d. 6.1m
9. An electric motor produces a tension of 4500N in a load lifting cable and rolls it at the rate of 2m/s. the power of the motor is –
   a. 9kW
   b. 15kW
   c. 225kW
   d. 9000hp
10. A crane lifts 300 kg weight from earth's surface upto a height of 2m in 3sec. the average power generated by it will be –
   a. 1960W
   b. 2205W
   c. 4410W
   d. 0W
11. Two men with weights in the ratio 5:3 run up a staircase in times in the ratio 11:9. The ratio of power of the first to that of second is –
   a. 15:11
   b. 11:15
   c. 11:9
   d. 9:11
12. A car is moving with a speed of40km/hr. if the car engine generates 7kW power, then the resistance of the path is
   a. 360N
   b. 630N
   c. Zero
   d. 280N
13. A body of mass m starting from rest from origin moves along x-axis with constant power P. the relation between velocity and distance travelled by the body will be –
   a. $x \propto v^{\frac{1}{2}}$
   b. $x \propto v^2$
   c. $x \propto v$
   d. $x \propto v^3$
14. A pump is used to deliver water at a certain rate from given pipe. To obtain n times water from the same pipe in the same time, by what factor, the force of the motor should be increased?
   a. n times
   b. $n^2\ times$
   c. $n^3\ times$
   d. $\frac{1}{n}\ times$
15. If the force applied is F and the velocity gained is v, then the average power developed is –
   a. F/v
   b. v/F
   c. Fv/2
   d. Fv^2