

Board – CBSE

Class – 9th

Topic – Work and energy

1. Write an expression for the work done when a force is acting on an object in the direction of its displacement.
2. Certain force acting on a 20 kg mass changes its velocity from 5 ms^{-1} to 2 ms^{-1} . Calculate the work done by the force.
3. What are the various energy transformations that occur when you are riding a bicycle?
4. Differentiate between Potential and kinetic energy?
5. A man of mass 50 Kg runs up a flight of stairs having a rise of 5 m, in 4s.
 - a) What is the work done by the man?
 - b) What is the average power developed by the man?
6. State the difference between Power and energy?
7. A 1800 Kg car is moving at 30 m/s. when brakes are applied. If the average force exerted by the brakes is 6000N, find the distance travelled by the car before it comes to rest?
8. The kinetic energy of an object of mass, m moving with a velocity of 5 m/s is 25 J. What will be its kinetic energy when its velocity is doubled? What will be its kinetic energy when its velocity is increased three times?
9. An object of mass 40 kg is raised to a height of 5 m above the ground. What is its potential energy? If the object is allowed to fall, find its kinetic energy when it is half way down.
10. What is the work done by the force of gravity on a satellite moving round the earth? Justify your answer.
11. Calculate the work required to be done to stop a car of 1500 kg moving at a velocity of 60 km/h?
12. Derive an expression for the kinetic energy of the body? Calculate the kinetic energy for a body of mass 5 Kg moving a velocity 2.5 m/s
13. A body of mass 5Kg is lifted vertically at a constant velocity of 12m. calculate
 - a) the force applied
 - b) work done in lifting the body
 - c) what happens to the work performed?

14. What do you understand by the units of electrical energy? How many joules of energy is consumed if the electrical meter shows 400 units of energy?
15. Derive an expression for the potential energy of the body. Calculate P.E of body of mass 10Kg at a height of 10m.