

**CLASS –IX**  
**SCIENCE**  
**CHAPTER11 , WORK AND ENERGY**  
**ASSIGNMENT**

**1 Marks Questions**

- Q1. What is the work done when a body is moved horizontally along a frictionless surface?  
Q2. Define 1 Joule.  
Q3. What is the work done on a body moving in a circular path?  
Q4. When is work said to be done against the force of gravity?  
Q5. Define 1 watt.  
Q6. What is kinetic energy?  
Q7. What will happen to the Kinetic Energy of a body if its velocity is doubled?  
Q8. Name four units of energy.  
Q9. In a tug of war, one team gives way to other. What work is being done and by whom?

**2 Marks Questions.**

Q10. Name the transformation of energy involved in these cases

- a. Electric Heater
- b. Dynamo
- c. Microphone
- d. Electric Cell
- e. Headphone
- f. Photoelectric Cell
- g. When Coal burns

Q11. A person holds a body of mass 20 kg over his head for 10 sec. Has he done any work? Justify your answer.

Q12. A free falling body stops on reaching the ground. What happens to its kinetic energy?

Q13. How are K.E. and momentum related?

Q14. Is it possible that a body be in accelerated motion under a force and no work is being done by the force?

Q15. When an arrow is shot from its bow, it has K.E. From where does it get the K.E.?

**3 Mark Questions (Numerical)**

Q16. A force acting on a 20 kg mass changes its velocity from 5m/s to 2 m/s. Calculate the work done.

Q17. The K.E. of an object of mass  $m$  moving with a velocity of 5m/s is 25 J. What will be its K.E. when its velocity is doubled? What will be its K.E when its velocity is increased 3 times?

Q18. An object of mass 12 Kg is at a certain height above the ground. If the gravitational P.E. is 480 J, find the height at which the object is w.r.t the ground ( $g= 10\text{m/s}^2$ )

Q19. An object of mass 40 kg is raised to a height 5 m above the ground. What is its P.E.? If object is allowed to fall, find its K.E. just before touching the ground and also its K.E. when it is half way down.

Q20. What is the work done to increase the velocity of car from 36 km/h to 72km/h, if the mass = 1500Kg.

Q21. A man whose mass is 50 kg climbs up 30 steps of a stair in 30 s. If each step is 20 cm high, calculate the power used in climbing stairs.

### **5 Marks Questions**

Q22. Deduce a formula for K.E of a body.

Q23. State the law of conservations of energy. Show that when a body falls from a height the total mechanical energy remains same. M.C.Q. (1 mark each)

Q24. P.E. of a person is maximum when he is -A. standing B. sitting on a chair C. sitting on the ground D. lying down on the ground

Q25. Work done by moon in moving around earth-A. +ve B. -ve C. zero D. unknown

Q26. Work is measured as product of- A. Force and time B. Force and displacement C. Power and displacement D. Force and acceleration

Q27. Value of g is - A. 9.8 m/s B. 9.8 cm/s<sup>2</sup> C. 9.8 m/s<sup>2</sup> D. 9.8 cm/s