

## CH: 11 - WORK AND ENERGY

1. Define work. Is it possible that a force acts on a body and still work done is zero? Support your answer by an example.
2. Under what conditions work done is a) positive b) negative and c) zero?
3. What is the work done against gravity when a body is moved horizontally along a frictionless surface?
4. Give two examples when a body possesses potential energy as well as kinetic energy.
5. What is the work done when a body moves in a circular path? Give reason
6. Two bodies of equal masses moving with velocities  $V$  and  $3V$  respectively. Find the ratio of their kinetic energies.
7. An object is dropped from a height  $h$ , when is its
  - a. potential energy maximum
  - b. kinetic energy maximum
  - c. potential energy = kinetic energy
8. State the law of conservation of energy. What kind of energy transformation takes place in the list below?
  - a. microphone
  - b. loudspeaker
  - c. electric bell
  - d. torch battery
  - e. electric motor
9. Define power. Two toys A and B do the same work in 5 minutes and 6 minutes respectively? Which of the two has more power and why?
10. What do you mean by potential energy? Derive an expression for the gravitational potential energy of a body.
11. What do you mean by kinetic energy of a body? Derive an expression for kinetic energy of a body of mass ' $m$ ' moving with a uniform velocity ' $V$ '.
12. A body of mass 5 kg is thrown vertically upwards with a speed of 10 m/s. What is the kinetic energy when it is thrown? Find the potential energy when it reaches at the highest point. Also find the maximum height attained by the body.
13. When do we say that the work done is negative? Certain force acts on a 20 kg mass changes its velocity from 36 km/h to 90 km/h. Find the work done by the force.
14. a) What do you mean by power? State its SI unit.  
b) A person of mass 40 kg climbs up staircase of 30 steps in 10 s. If the height of each step is 20 cm, calculate his power.
15. Name the commercial unit of energy. How many 'units of energy' will be consumed by five bulbs of 60 W each if they run for 10 hrs daily in a house?