Chapter 11 – Work & Energy

1. If the speed of the body is halved, what is the change in its kinetic energy?
2. Define work and write down its SI unit.
3. Define positive work, negative work and zero work with examples.
4. Give few examples of energy possessed by different objects due to their motion.
5. Define energy. Name and define its SI unit.
6. a. Define kinetic energy.
   b. Derive an expression for kinetic energy of an object and also give its SI unit.
7. a. Define potential energy.
   b. Derive an expression for potential energy of an object.
8. Derive a relation between kinetic energy of a body and its momentum.
9. State and prove law of conservation of energy.
10. A force of 10 N acts on a body of 2 kg for 3 seconds. Find the kinetic energy acquired by the body in 3 seconds. (225J)
11. A body of mass 5 kg thrown vertically upwards with a speed of 10 m/s. What is its kinetic energy when it is thrown? (250J)
12. Define power. Name and define its SI unit.
13. A car weighing 1200KG is uniformly accelerated from rest and covers a distance of 40m in 5S. Calculate the work done by the engine of car during this time. What is the final kinetic energy of the car? (153600J)
14. A bag of sugar weighs 100kg. Calculate the height to which it should be raised so that its potential energy is 2300 J. (2 3m)   (g=10m/s²)
15. A man of mass 60kg runs up a height of 30 steps in 40S. One each step is 20cm high, calculate his power. (90W)
16. An electric bulb of 300 W works for 4h on a day. Calculate the units of energy consumed in 15 days.(18kWh)
17. Define 1kWh.
18. If an oven of 2200W is used for 30 minutes every day, find the electric energy consumed in the month of January.(34.1kWh)
19. Calculate the power of a pump which lifts 100 kg of water to a water tank placed at a height of 20m in 10s. (g=10m/s²)   (2Kw)
20. Two bulbs of 40W each are lighted for eight hours daily. Find the cost of electrical energy consumed by them. one week at rupees 3 per unit.(13.44 RS)