CLASS—IX

Physics Assignment

WORK, ENERGY AND POWER

1. Under what conditions work is said to be done?
2. Derive the formula for work done by a constant force
3. Give few examples where energy is possessed by a body due to its change in shape.
4. State and prove the law of conservation of energy.
5. Is it possible that force is acting on a body but still work done is zero? Explain.
6. A rocket of mass $3x10^6$ kg takes off from a launching pad and acquires a vertical velocity of 1km/s at an altitude of 25 km. calculate (a) the potential energy and (b) the kinetic energy. (g = 9.8m/s2)
7. If a man lifts a load up with the help of a rope such that it raises the load of mass 50kg to a height of 20m in 100 sec. Find the power of man
8. A ball is dropped from a height of 5m. Find the velocity of the ball just before it reaches the ground. Do you require the value of mass to find the velocity?
9. Two persons A and B do same amount of work. The person A does that work in $t_1$sec and the person b in $t_2$sec. Find the ratio of power delivered by them.
10. Why do our hands become warm when rubbed against each other? Explain.
11. The kinetic energy of a body of mass 15 kg is 30J. What is its momentum?
12. Give an example for each of the following energy conversion: (1) electrical energy to kinetic energy. (2) Chemical energy to electrical energy (3) sound energy to electrical energy
13. Two bodies have same momentum. Which will have greater kinetic energy- heavier body or lighter body?
14. An electric bulb of 60w is used for 6h per day .Calculate the units of energy consumed in one day by the bulb.
15. A boy of mass 50kg runs up to a stair case of 45 steps in 9s. If the height of a step is 15cm, find his power. ($g= 10m/s^2$)
16. Two particles of masses 1g and 2g have equal momentum. Find the ratio between their kinetic energies?
17. What will be the work done by the string, when a stone is tied to a string and whirled in a circle?
18. A locomotive exerts a force of 7500N and pulls a train through 1.5 km. How much work is done by locomotive?
19. What work a boy of mass 50kg will do in order to increase running speed from 9km/h to 18km/h.
20. The speed of a moving body is halved. What is the change in its K.E.?
21. State the energy changes taking place in the following cases: (1) A car moves up a hilly road.(2) a stone projected vertically upward returns
22. When we cut a log of wood with a saw it becomes warm, why?
23. If an electric iron of 1200W is used for 30 minutes everyday, find electric energy consumed in the month of April.