CHAPTER 4. (WORK, ENERGY AND POWER REVISION)(BASED ON NCERT PATTERN)

Question 1. An object of mass 40 kg is raised to a height of 5 m above the ground. What is its potential energy?
Ans:- If the object is allowed to fall, find its kinetic energy when it is half-way down.

Question 2. What is the work done by the force of gravity on a satellite moving round the earth? Justify your answer.
Ans:- When a satellite moves round the Earth then at each point of its path the direction of force of gravity on the satellite (along the radius) is perpendicular to the direction of its displacement (along the tangent). Hence, the work done on the satellite by force of gravity is zero.

Question 3. Can there be displacement of an object in the absence of any force acting on it?
Answer:- The answer is both Yes and No. Yes because when an object moves in deep space from one point to another point in a straight line, the displacement takes place, without the application of force. No, because force cannot be zero for displacement on the surface of earth. Some force is essential.

Question 4. An electric heater is rated 1500 W. How much energy does it use in 10 hours?
Answer:- Energy consumed by an electric heater can be obtained with the help of the expression,
$P = W/t$
where,
Power rating of the heater, $P = 1500$ W $= 1.5$ kW
Time for which the heater has operated, $t = 10$ h
Work done = Energy consumed by the heater
Therefore, energy consumed = Power × Time
$= 1.5 × 10 = 15$ kWh
Hence, the energy consumed by the heater in 10 h is 15 kWh or 15 units.