

Class 10 Physics – Quick Notes

Chapter: Work, Energy and Power

1. Work

Work is said to be done when a force produces displacement in the direction of force.

Formula: $W = F \times s$

2. Types of Work

- 1 Positive Work – Force and displacement in the same direction
- 2 Negative Work – Force and displacement in opposite directions
- 3 Zero Work – No displacement or force perpendicular to displacement

3. Energy

Energy is the capacity to do work.

SI Unit: Joule (J)

4. Kinetic Energy

Energy possessed by a body due to its motion.

Formula: $KE = \frac{1}{2}mv^2$

5. Potential Energy

Energy possessed by a body due to its position or configuration.

Formula: $PE = mgh$

6. Mechanical Energy

Sum of kinetic and potential energy.

Formula: Mechanical Energy = $KE + PE$

7. Law of Conservation of Energy

Energy can neither be created nor destroyed; it can only change its form.

8. Power

Power is the rate of doing work.

Formula: $P = W / t$

SI Unit: Watt (W)

9. Commercial Unit of Energy

Electrical energy is measured in kilowatt-hour (kWh).

$$1 \text{ kWh} = 3.6 \times 10^6 \text{ J}$$

10. Key Exam Points

- 1 Work and energy are scalar quantities
- 2 Power can be average or instantaneous
- 3 Kinetic energy depends on square of velocity
- 4 Potential energy depends on mass and height