CHAPTER-10 | Work and Energy

QUIZ-01

1. When is work said to be done on an object?
   A. Only when force is applied
   B. Only when displacement occurs
   C. When force is applied and the object is displaced
   D. When the object is at rest (C)

Explanation : For work to be done, both force must be applied and displacement must occur in the direction of the force.

2. What is the SI unit of work?
   A. Newton B. Joule
   C. Watt D. Kilogram (B)

Explanation : Work is measured in joules, where 1 joule = 1 newton × 1 meter.

3. A man applies a force of 10 N and moves an object 2 m in the direction of the force. What is the work done?
   A. 5 J B. 10 J
   C. 20 J D. 0 J (C)

Explanation : Work done = Force × Displacement = 10 N × 2 m = 20 J.

4. What type of energy is stored in an object due to its position above the ground?
   A. Kinetic energy B. Potential energy
   C. Chemical energy D. Light energy (B)

Explanation : Energy possessed by a body due to its height (position) is called gravitational potential energy.

5. Which formula gives the kinetic energy of an object of mass m and velocity v?
   A. KE = mv B. KE = mgh
   C. KE = ½ mv^2 D. KE = mg (C)

Explanation : Kinetic energy = ½ mv^2.

6. What happens to the total mechanical energy of a freely falling object (ignoring air resistance)?
   A. It increases B. It decreases
   C. It remains constant D. It becomes zero (C)

Explanation : According to the law of conservation of energy, total mechanical energy remains constant.

7. What is 1 kilowatt equal to?
   A. 10 W B. 100 W
   C. 1000 W D. 1 W (C)

Explanation : 1 kilowatt = 1000 watts.

8. If an object is moved horizontally on a table without change in height, what is the work done by gravity?
   A. Positive B. Negative
   C. Zero D. Infinite (C)

Explanation : There is no displacement in the direction of gravity; hence, work done by gravity is zero.

9. What is the formula for power?
   A. Power = Energy × Time
   B. Power = Work / Time
   C. Power = Force × Time
   D. Power = Distance / Work (B)

Explanation : Power is defined as the rate of doing work: Power = Work ÷ Time.

10. What kind of work is done when force and displacement are in opposite directions?
    A. Zero work B. Maximum work
    C. Positive work D. Negative work (D)

Explanation : When force and displacement are in opposite directions, the work done is negative.