CHAPTER-10 | Work and Energy

QUIZ PART-01

1. What is meant by work in physics?
   A. Force acting without movement
   B. Product of mass and acceleration
   C. Force causing displacement
   D. Energy stored in a body (C)

Explanation : Work is done when a force applied on a body causes displacement.

2. The SI unit of work is:
   A. Newton
   B. Joule
   C. Watt
   D. Pascal (B)

Explanation : The SI unit of work is joule (J), where 1 J = 1 N × 1 m.

3. Work done is positive when:
   A. Force is opposite to displacement
   B. Displacement is zero
   C. Force is perpendicular to displacement
   D. Force and displacement are in the same direction (D)

Explanation : Positive work occurs when force acts in the direction of displacement.

4. A force of 10 N moves an object by 5 m in the same direction. The work done is:
   A. 2 J B. 15 J
   C. 50 J D. 100 J (C)

Explanation : Work = Force × Displacement = 10 × 5 = 50 J.

5. When force is perpendicular to displacement, the work done is:
   A. Maximum
   B. Negative
   C. Zero
   D. Infinite (C)

Explanation : Work done becomes zero because cos 90° = 0.

6. Which of the following is an example of zero work done?
   A. Pulling a cart
   B. Kicking a football
   C. Holding a book stationary
   D. Pushing a moving box (C)

Explanation : No displacement occurs while holding a book stationary.

7. Negative work is done when:
   A. Force acts along displacement
   B. Force acts opposite to displacement
   C. Force acts at 90° to displacement
   D. No force acts (B)

Explanation : Negative work occurs when force opposes motion.

8. Friction generally does:
   A. Positive work
   B. Zero work
   C. Negative work
   D. Infinite work (C)

Explanation : Friction acts opposite to motion, so it does negative work.

9. A porter lifts a 20 kg suitcase to a height of 2 m. ($g = 10\ m/s^2$) Work done is:
   A. 200 J
   B. 400 J
   C. 40 J
   D. 100 J (B)

Explanation : Work = mgh = 20 × 10 × 2 = 400 J.

10. Work done is a:
    A. Vector quantity
    B. Scalar quantity
    C. Tensor quantity
    D. Dimensionless quantity (B)

Explanation : Work has magnitude only, so it is a scalar quantity.