1. What is acceleration defined as?
   A. The rate of change of displacement with time
   B. The rate of change of velocity with time
   C. The slope of a position-time graph
   D. The total distance travelled per unit time (B)

Explanation : Acceleration is the change in velocity per unit time, a vector quantity with SI unit m/s^2.

2. Which of the following represents retardation?
   A. Velocity increasing with time
   B. Acceleration constant and positive
   C. Velocity decreasing with time
   D. Zero acceleration with uniform motion (C)

Explanation: Retardation (or deceleration) means velocity decreases with time, so acceleration is negative.

3. What does the slope of a velocity–time graph represent?
   A. Distance travelled
   B. Speed
   C. Acceleration
   D. Displacement (C)

Explanation: The slope of a velocity–time graph gives acceleration, while the area under the graph gives displacement.

4. Which equation is known as the first equation of motion?
   A. $v= u+at$
   B. $a= ut + 1/2at^2$
   C. $v^2= u^2+2as$
   D. $a= u+v/2t$ (A)

Explanation : The first equation of motion relates velocity, acceleration, and time: $v= u+at$

5. What is the second equation of motion derived from the average velocity?
   A. $v= u+at$
   B. $a= ut + 1/2at^2$
   C. $v^2= u^2 +2as$
   D. $s= u+v/2t$ (B)

Explanation: Using displacement = average velocity × time, we get $s= ut+1/2at^2$

6. Which equation is obtained by eliminating time from motion relations?
   A. $v= u+at$
   B. $s= ut + 1/2at^2$
   C. $v^2= u^2 + 2as$
   D. $s= u+v/2t$ (C)

Explanation: Eliminating tt from equations leads to the third equation of motion $v^2 = u^2 + 2as$

7. What is the dimensional formula of acceleration?
   A. $[M^0 L^0 T^0]$
   B. $[M^0 L^1 T^{-1}]$
   C. $[M^0 L^1 T^{-2}]$
   D. $[M^1 L^1 T^{-2}]$ (C)

Explanation: Since acceleration = velocity/time, its dimension $[M^0 L^1 T^{-2}]$

8. If a car's velocity changes from 5 m/s to 10 m/s in 5 seconds, its acceleration is
   A. $0.1\ m/s^2$
   B. $1\ m/s^2$
   C. $5\ m/s^2$
   D. $10\ m/s^2$ (B)

Explanation: $a= v-u/t = 10-5/5 = 1m/s^2$

9. Which of the following describes uniform acceleration?
   A. Velocity increases by equal amounts in equal time intervals
   B. Velocity decreases at varying rates
   C. Velocity remains constant throughout
   D. Displacement is always zero (A)

Explanation: Uniform acceleration means velocity changes equally in equal intervals of time.

10. The area under a velocity–time graph between t=0 and t=T gives
    A. Average speed
    B. Displacement
    C. Acceleration
    D. Initial velocity (B)

Explanation : The area under the velocity–time curve represents displacement of the body.