PHYSICS
SECTION A

1. A particle covers half of its total distance with speed v_1 and the rest half distance with speed v_2. Its average speed during the complete journey is

$(1)\frac{v_1^2 v_2^2}{v_1^2+v_2^2}$ $(2)\frac{v_1+v_2}{2}$ $(3)\frac{v_1 v_2}{v_1+v_2}$ $(4)\frac{2v_1 v_2}{v_1+v_2}$

2. A car moves for half of its time at 80 km/h and for rest half of time at 40 km/h. Total distance covered is 60 km. What is the average speed of the car?
(1) 60 km / h (2) 80 km / h (3) 120 km / h (4) 180 km / h

3. A man goes 10 m towards North, then 20m towards east then displacement is
(1)22.5 m (2) 25 m (3)25.5 m (4) 30 m

4. Which of the following is a one-dimensional motion?
(1) Landing of an aircraft (2) Earth revolving a round the sun
(3) Motion of wheels of a moving trains (4) Train running on a straight track

5. A particle moves along a semicircle of radius 10m in 5 seconds. The average velocity of the particle is
(1) 2π ms^{-1} (2) 4π ms^{-1} (3) 2 ms^{-1} (4) 4 ms^{-1}

6. The numerical ratio of displacement to the distance covered is always
(1) Less than one (2) Equal to one
(3) Equal to or less than one (4) Equal to or greater than one

7. A body in one dimensional motion has zero speed at an instant. At that instant, it must have
(1) Zero velocity (2) Zero acceleration
(3) Non-zero velocity (4) Non-zero acceleration

8. Consider the motion of the tip of the seconds hand of a clock. In one minute (R be the length of seconds hand), its
(1) Displacement is 2π R (2) Distance covered is 2R
(3) Displacement is zero (4) Distance covered is zero

9. If magnitude of average speed and average velocity over a time interval are same, then
(1) The particle must move with zero acceleration
(2) The particle must move with non-zero acceleration
(3) The particle must be at rest
(4) The particle must move in a straight line without turning back

10. The position of a particle moving along x-axis is given by $x = 10t - 2t^2$. Then the time (t) at which it will momentarily comes to rest is
(1) 0 (2) 2.5 s (3) 5 s (4) 10 s