

- Consider $g=10\text{m/s}^2$

* If x stands for displacement, v : velocity, a : acceleration, t : time. Answer **Q.1& 2**:

Q.1. Which one of the following equations is dimensionally correct:

- (a) $v = v_o + at + \frac{x}{t}$ (b) $v = v_o + at + x$ (c) $v = v_o + at + xt$
 (d) $v = v_o + at + xt^2$ (e) $v = v_o + at + \frac{t}{x}$

Q.2. In the equation $v^2 = cx$, the units of the constant c is:

- (a) m/s (b) m/s^2 (c) m^2/s (d) $1/\text{s}^2$ (e) 1/s

* Given the vectors **A** (10, 30°) and **B** (5, 60°) in the xy plane, and **C** = $5\mathbf{k}$. (**Q.3-6**):

Q.3. The x -component of the vector $\mathbf{R} = 2\mathbf{A} + \mathbf{B}$ is:

- (a) 19.8 (b) 13.7 (c) 11.2 (d) 9.8 (e) 6.2

Q.4. The magnitude of the vector $\mathbf{T} = \mathbf{A} + \mathbf{B} + \mathbf{C}$, is:

- (a) 18.2 (b) 15.4 (c) 14.5 (d) 11.2 (e) 7.1

Q.5. The angle between the vectors **B** and **C** is:

- (a) 180° (b) 90° (c) 60° (d) 30° (e) zero

Q.6. The cross product $\mathbf{A} \times \mathbf{C}$ is:

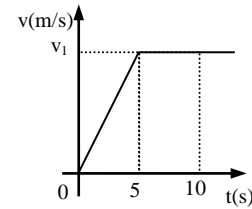
- (a) $25\mathbf{k}$ (b) $25\mathbf{i} - 43.3\mathbf{j}$ (c) $21.7\mathbf{i} - 12.5\mathbf{j}$ (d) $-25\mathbf{i} + 43.3\mathbf{j}$ (e) $-25\mathbf{k}$

Q.7. An object moved with velocity 5m/s for 1 minute, then with 10m/s for 1.5 minutes, then with -10m/s for 30seconds. The average velocity of this object is:

- (a) zero (b) 3 m/s (c) 4 m/s (d) 5 m/s (e) 6 m/s

Q.8. The velocity of an object is given by the figure shown. The displacement it moved in the time period (0-10 sec) is 75m. The acceleration in the period (0-5sec) is:

- (a) 2 m/s^2 (b) 4 m/s^2 (c) 6 m/s^2
(d) 8 m/s^2 (e) 10 m/s^2



Q.9. A car started from rest with acceleration 2 m/s^2 . After 30 seconds, the acceleration was removed. The distance it will move in the next 30seconds is:

- (a) 1800 m (b) 1200 m (c) 600 m (d) 300 m (e) 150 m

Q.10. A ball was released from rest from the top of a building. The time needed for the ball to move between points **a** and **b** (20m and 30m, respectively) below the releasing point (نقطة الإسقاط) is:

- (a) 0.24 sec (b) 0.45 sec (c) 0.65 sec (d) 0.83 sec (e) 1.00 sec