## Q1. 23 January Shift 2

A paratrooper jumps from an aeroplane and opens a parachute after 2 s of free fall and starts deaccelerating with $3 \text{ m/s}^2$. At 10 m height from ground, while descending with the help of parachute, the speed of paratrooper is 5 m/s . The initial height of the airplane is _____ m.
$(g = 10 \text{ m/s}^2)$
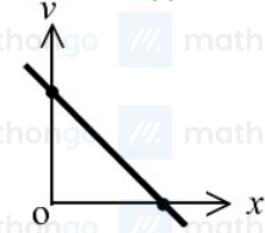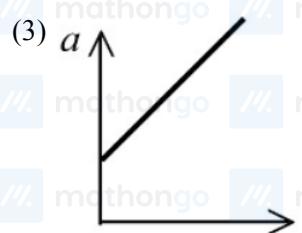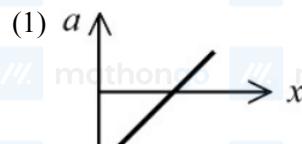
(1) 82.5                    (2) 20                    (3) 62.5                    (4) 92.5

## Q2. 24 January Shift 2

The velocity $(v)$ - Distance $(x)$ graph is shown in figure. Which graph represents acceleration $(a)$ versus distance



$(x)$ variation of this system?

(1)


(2)


(3)


(4)


## Q3. 28 January Shift 1

Water drops fall from a tap on the floor, 5 m below, at regular intervals of time, the first drop strikes the floor when the sixth drop begins to fall. The height at which the fourth drop will be from ground, at the instant when the first drop strikes the ground is _____ m.
$(g = 10 \text{ m/s}^2)$

(1) 4.2                    (2) 2.5                    (3) 4.0                    (4) 3.8

**Q4. 28 January Shift 2**

A particle starts moving from time $t = 0$ and its coordinate is given as $x(t) = 4t^3 - 3t$

A. The particle returns to its original position (origin) 0.866 units later

B. The particle is 1 unit away from origin at its turning point

C. Acceleration of the particle is non-negative

D. The particle is 0.5 units away from origin at its turning point

E. Particle never turns back as acceleration is non-negative

Choose the correct answer from the options given below :

(1) A, B, C Only      (2) C, E Only      (3) A, C Only      (4) A, C, D Only

**ANSWER KEYS**

**1.** (4)       **2.** (1)       **3.** (1)       **4.** (1)