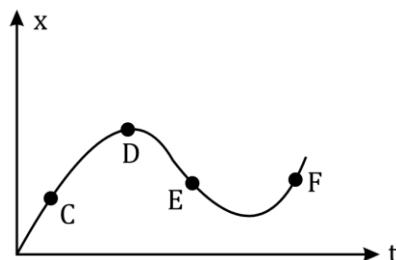


## DPP - 3

## SOLUTION

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1.



Slope of C → +ive → velocity +ive

Slope of D → zero → velocity zero

Slope of E → negative → Velocity negative

Slope of F → positive → Velocity +ive.

2. Area of v - x graph gives Distance travelled.

$$A = 55 \text{ m}$$

3. given → acceleration is constant

$$a = \frac{dv}{dt} = v \frac{dv}{dx}$$

$a = \text{constant} \rightarrow$  in graph B  $\rightarrow v$  increases

while  $\frac{dv}{dx} \rightarrow$  decrease.

So option B is correct.

4.  $v_A = \tan 30^\circ$

$$v_B = \tan 60^\circ$$

$$\frac{v_A}{v_B} = \frac{\tan 30^\circ}{\tan 60^\circ} = \frac{1}{\sqrt{3} \times \sqrt{3}} = \frac{1}{3}$$

5. Option B.

Slope of x - t graph increase that's mean velocity increases.

$\rightarrow$  Int v - t graph slope is constant that's mean acceleration is constant

6.  $a = v \frac{dv}{dx}$



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v +ive & decrease. &  $\frac{dv}{dx}$  is constant and negative overall acceleration is de negative & increasing.

So option (A) is correct.

7. A to m Slope of v – t graph is constant f negative. so a is –ive f constant.

m to B. Slope of vet graph is constant f positive, that's mean acceleration is positive. f constant

So finally option B is correct.

8. Distant is basically area under the v – t graph. All taken positive.

$$d = \frac{37}{3} \text{ m}$$

9. at t = 5sec position of particle.

= Area of v – t graph from t = 0 to t = 5sec.

$$= \frac{1}{2} \times 2 \times 2 + 2 \times 2 + 1 \times 3 = 2 + 4 + 3 = 9 \text{ m}$$

Option A is correct.

10. Option (a) because at one position they have two velocity which is not possible.

11. Option A

$$q = v \frac{dv}{dx}$$

v → positive

but slope  $\frac{dv}{dx}$  is negative.

$$12. \frac{v^2 - 20}{x - 0} = \frac{80 - 20}{30}$$

$$v^2 - 20 = \frac{60}{30}x$$

$$v^2 = 2x + 20$$

diff both side w.r.t x.

$$2v \frac{dv}{dx} = 2$$

$$v \frac{dv}{dx} = 1 \text{ ms}^{-2}$$



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13. Area of  $u - t$  graph.

$$\frac{1}{2} \times 10 \times 5 = 25\text{m.}$$

14. Area of ant graph = change in velocity.

$$\frac{1}{2} \times 10 \times 11 = V - 0$$

$$v = 55\text{m/s}$$

