Page 43
Solution 53
(i) The distance covered from A to B is(3-0) =3 cm
Time taken to cover the distance from A to B =(5 -2) =3s
(ii) The speed of the body as it moves from B to C is zero.
(iii) The distance covered from C to D is (7-3)=4 cm
Time taken to cover the distance from C to D = (9-7)=2s

(i) The distance covered from A to B is (3-0) =3 cm
Time taken to cover the distance from A to B =(5 -2) =3s

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\text{Speed} = \frac{3\text{cm}}{3\,\text{sec}} = 1\ \text{cm/s}$$

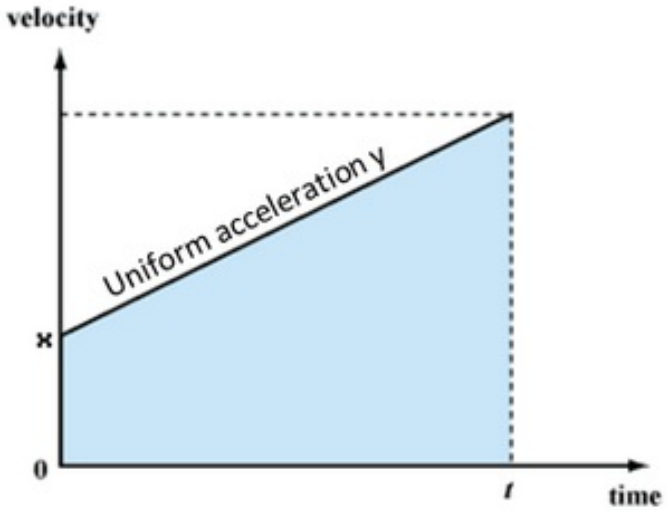
(ii) The speed of the body as it moves from B to C is zero.

(iii) The distance covered from C to D is (7-3)=4 cm

Time taken to cover the distance from C to D = (9-7)=2s

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{4\text{cm}}{2\,\text{sec}} = 2\text{cm/s}$$

Solution 54
(a) The body has a uniform velocity if its displacement-time graph is a straight line.
(b) The body has a uniform acceleration if its velocity-time graph is a straight line.
Solution 55



Solution 56
(i) BC represents uniform velocity. From graph, we see that the velocity of the body at point C = 40km/h
(ii) Acceleration between A and B = slope of line AB
(iii) BC represents uniform velocity, so acceleration acting on the body between B and C is zero.

(i) BC represents uniform velocity. From graph, we see that the velocity of the body at point C = 40km/h
(ii) Acceleration between A and B = slope of line AB

$$=\frac{(40-20)\text{km/h}}{(3-0)\text{h}} = 6.66\text{km/h}^2$$

(iii) BC represents uniform velocity, so acceleration acting on the body between B and C is zero.

Solution 57

Distance travelled = Area of rectangle OABC
= OA x OC
= 5 x 5 =25 m

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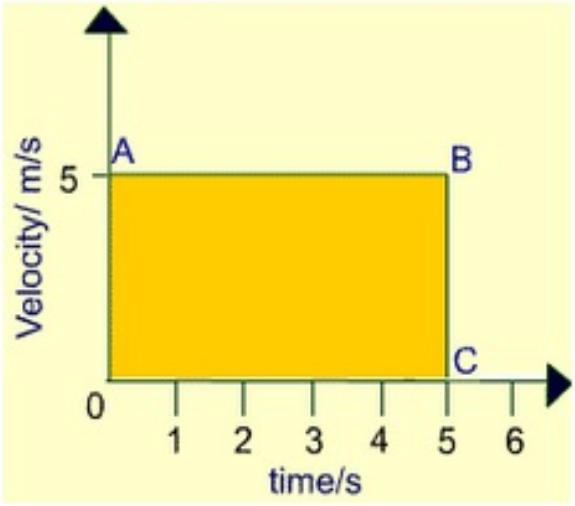


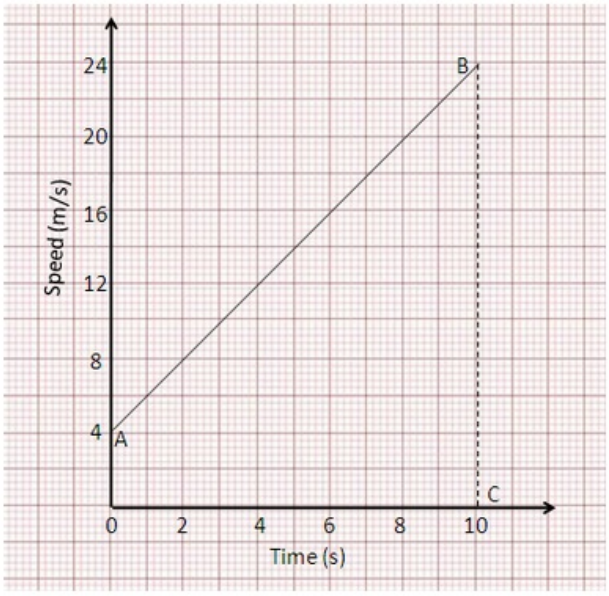
Solution 58

(i) Acceleration during first two seconds $=\frac{4.6-0}{2-0} = 2.3\text{m/s}^2$

(ii) Acceleration between second and tenth second is zero, since the velocity is constant during this time.

(iii) Acceleration during last two seconds $=\frac{0-4.6}{12-10} = -2.3\text{m/s}^2$

Solution 59



(i) Acceleration of the car=slope of line AB $=\frac{24-4}{10-0} = \frac{20}{10} = 2\text{m/s}^2$

(ii) Distance travelled by the car in 10s=area of trapezium OABC

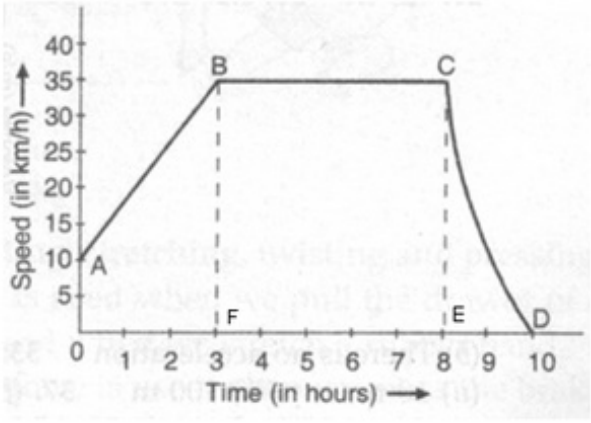
$$=\frac{1}{2}\times(\text{OA}+\text{BC})\times\text{OC}$$

$$=\frac{1}{2}\times(4+24)\times 10 = 140\text{m}$$

Solution 60

(i) Initial speed of the car=10km/h
(ii) Maximum speed attained by the car= 35km/h
(iii) BC represents zero acceleration.
(iv) CD represents varying retardation.
(v)

(i) Initial speed of the car=10km/h
(ii) Maximum speed attained by the car= 35km/h
(iii) BC represents zero acceleration.
(iv) CD represents varying retardation.
(v)



Distance travelled in first 8 hrs:

s=Area of trapezium OABF + Area of rectangle BCEF

$$= \frac{1}{2} \times (OA + BF) \times OF \; + \; BF \times FE$$

$$= \frac{1}{2} \times (10 + 35) \times 3 \; + \; (35 \times 5)$$

$$= 67.5 + 175$$

$$= 242.5 km$$

Solution 61

(i) Graph (c): The speedof the ball goes on decreasing uniformly as it moves upward, reaches zero at the highest point, and then increases uniformly as it moves downward.

(ii) Grap(a): The speed of the trolley decreases uniformly, then it moves at a constant speed, and then the speed increases uniformly.

********** END **********