Coming

Experiment Name : Time, Speed and Distance.

Section A

Q1) A car covers 800m in 40sec. Find speed in kmh^{-1}.

** Q2) Standing on a platform, a man observed a train 800m long crosses him in 40 sec. ~~Find~~ and the platform in 2min. what's the length of platform.

Q3 A car covers 300 km in 6 hrs => Then travel with a speed of 40 kmh^{-1} for 4 hrs, then cover 400 km with a " " 50 " " . Find avg speed.

Q4. → a) TCS => A boy went to school with a speed of 40 kmh^{-1} & returned with a speed of 60 kmh^{-1}. what's the avg speed of boy.

b) A car cover half of its distance with a speed of 4 kmh^{-1} & another half with a speed of 6 kmh^{-1}. Avg speed of car = ?

Q5 A train 800 km long moving with a speed of 40 ms^{-1}. Another train is comming in the same direction in a parallel path which was 200 m behind the 1st train. If the speed of 2nd train is 60 ms^{-1} & length of 2nd train is 1200 m. Find req. time to cross 2 train.

Q6 A boat takes 8 hrs to cover 400 km in downstream & takes 12 hrs " " " " in up " ; Find the i) speed of boat in still water. ii) speed of stream.

Q7) A boat takes 4 hrs to cover certain distance in downstream & " " 5 " " " same " " upstream.

i) what's the ratio of speed of boat in still water to the speed of stream.

ii) If the speed of stream is 5 kmh^{-1}, what is the speed of boat in still water?

Q8 2 train one started from Howrah & other started from Delhi at the same time in the opp direction. After their passing, they reached their destination in 9 hrs & 16 hrs resp.

i) what's the ratio of the speed of 2 trains?

ii) If the speed of 1st train is 80 kmh^{-1}, what's the speed of 2nd train.

Q9 2 trains, one started from howrah & other from Delhi at the same time in the opp direction with a speed of 40 kmh^{-1} & 60 kmh^{-1} resp. If the distance between H & D is 1000 km, then when & where will they meet.

Q10) 2 trains ——— speed of 40 kmh^{-1} & 60 kmh^{-1}. ——— and 2nd train starts 4 hrs after 1st train then when & where will they meet.

Q11) WIPRO => Avg speed of train without stoppage is 54 kmh^{-1} but with stoppage is 45 kmh^{-1}. what's the stoppage time per hrs.

Q12) A man obs if he moves with a speed of 40 kmh^{-1} he will be late by 15 min. But if he moves with a speed of 60 kmh^{-1}, he will be earlier by 20 min

i) what dist he has to cover ii) what the optimum sp. so that he reaches in scheduled time.

Experiment Name :

Q1 Speed $= \frac{800}{40} = 20 ms^{-1} = \frac{20000}{60 \times 60} = 5.5\ kmh^{-1}$

Q2 Speed $= \frac{800}{40} = 20 ms^{-1}$ length of platform $= 20 \times 120$
$= 2400 = 2.4\ km$

Q3 300km in 6 hrs $\Rightarrow$ Speed $= 50 kmh^{-1}$
160km in 4hrs $\Rightarrow$ " $= 40 kmh^{-1}$
400 " " 8 hrs $\Rightarrow$ " $= 50 km^{-1}$

Avg speed $= \frac{300+160+400}{6+4+8} = \frac{860}{18} = 47.7\ kmh^{-1}$

Q4 a) Avg speed $= \frac{40+60}{2} = 50 km\ h^{-1}$ b) Avg speed $= \frac{4+6}{2} = 5\ km\ h^{-1}$

Q5 1st train $\Rightarrow$ 800m / 40ms^{-1}
2nd " $\Rightarrow$ 1200m / 60ms^{-1}
$\rightarrow$ Distance = 200m

Relative speed $\Rightarrow$ $60 - 40 = 20 ms^{-1}$
$\therefore$ Time $= \frac{220}{2} = 110$ s (Ans)

Distance $= 200 + 800 + 1200$
$= 2200$ m.

Q6 Speed of str $\Rightarrow$ x km
" " both $\Rightarrow$ y km.

Down $\Rightarrow$ 8 hrs $= \frac{400}{x+y}$

up $\Rightarrow$ $y - x = \frac{400}{12}$

$\Rightarrow$ $x + y = 50$
$y - x = 33.33$
$2y = 41.66$

$\therefore y = 41.66\ kmh^{-1}$
$x = 8.36\ kmh^{-1}$

Q7 → Speed of Boat ⇒ x km h^{-1}
" " stream ⇒ y km h^{-1}

Down ⇒ $4 = \frac{\text{Distance}}{x+y}$ ⇒ $4(x+y) = \text{Dist.}$

Up ⇒ $5 = \frac{\text{Dist}}{x-y}$ ⇒ $5(x-y) = \text{Dist}$

$4x + 4y = 5x - 5y$

⇒ $9y = x$ ⇒ $x : y = 9 : 1$

ii) $y = 5$ km h^{-1}

⇒ $x = 45$ km h^{-1}

Q8) Distance ⇒ x km

without stop time ⇒ $x/54$ hr | with stop time ⇒ $x/45$ km h^{-1}

stopped time ⇒ 4.8 mins

Q8) i) speed$_1$: speed$_2$ = $\sqrt{16:9}$ = 4:3

ii) speed$_2$ = $\frac{60}{4} \times 3 = 60$ km h^{-1}

Q9) $T = \frac{S}{x+y} = \frac{1000}{40+60} = 10$ hrs

Q10) $\left(\frac{x}{y} = \sqrt{\frac{t_2}{t_1}} \Rightarrow t = \frac{S}{x+y}\right)$

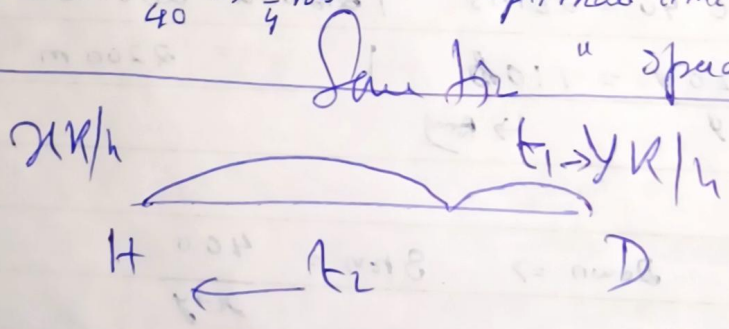
Q10) $T = \frac{S+Py}{x+y} = \frac{1000 + 4\times60}{100} = 12.40$ hrs

Q12) i) $S = \frac{LH + EM}{\frac{1}{LV} - \frac{1}{EV}} = \frac{\frac{15}{60} + \frac{20}{60}}{\frac{1}{40} - \frac{1}{60}} \Rightarrow \frac{35/60}{1/120} = 70$ km. → Distance.

Late time = $\frac{70}{40} \Rightarrow \frac{7}{4}$ hrs. Optimal time → $\frac{7}{4} + \frac{15}{60} = \frac{8}{4} = 2$ hrs

" speed = ~~70/2 = 35 km h^{-1}~~

→ $70/3/2 \Rightarrow \frac{140}{3} = 68.88$ km h^{-1}



$$\frac{1st}{2nd} = \frac{x}{y} = \sqrt{\frac{t_2}{t_1}}$$