



# SILVER OAK UNIVERSITY

EDUCATION TO INNOVATION

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DIV :- B.Tech (CE2)

Subject :- ABPS = II

Batch:- CE2 (Batch - II).

## Assignment-1

Q-1 A person crosses a 600m long street in 5 minutes. What is his speed in km per hour?

$\Rightarrow$  600 meters = 0.6 km

5 minutes =  $\frac{5}{60}$  hours

$\therefore$  Speed =  $\frac{\text{Distance}}{\text{Time}} = \frac{0.6}{\frac{5}{60}} = 7.2$  km/h

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{0.6}{\frac{5}{60}} = 7.2 \text{ km/h}$$

Q-2 An aeroplane covers a certain distance at speed of 240 kmph in 5 hours. To cover the same distance in  $\frac{5}{3}$  hours, it must travel at speed of:

$$\Rightarrow \text{Distance} = 240 \times 5 = 1200 \text{ km}$$

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{1200}{\frac{5}{3}} = \frac{1200 \times 3}{5} = 720 \text{ kmph}$$



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Q.3

If a person walks at 14 km/hr instead of 10 km/hr, we would have walked 20 km more. The actual distance travelled by him is:

⇒ Let the actual distance travelled be  $x$  km.

$$\text{Then, } \frac{x}{10} = \frac{x+20}{14}$$

$$14x = 10x + 200$$

$$4x = 200$$

$$x = 50 \text{ km}$$

The actual distance travelled is 50 km.

Q.4.

excluding stoppages, the speed of a bus is 54 km/h and including stoppages, it is 45 km/h. for how many min does the bus stop per hour?

⇒ excluding stoppages speed is 54 km/h so, in 1 hour it travels 54 km

⇒ including stoppages speed is 45 km/h so, in 1 hour it travels 45 km

Distance Time

54              60 (minute) (b) 10 min

45               $t$

$$54t = 60 \times 45$$



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$$\text{Total time} = \frac{60 \times 45}{64} = 50 \text{ min}$$

Stoppage time will be  $= 60 - 50 = 10 \text{ min}$

Q-5

The ratio b/w the speeds of two trains is 7:8. If the second train runs 400 km in 4 hours then the speed of the first.

$$(d) 87.5 \text{ km/hr.}$$

$\Rightarrow$  Speed of second train =  $\frac{\text{Distance}}{\text{Time}}$

$$= 100 \text{ km/hr.}$$

$\rightarrow$  Speed of first train =  $\frac{7}{8}$  of speed of second train

$$= \frac{7}{8} \times 100$$

$\rightarrow$  Speed of first train =  $\frac{7}{8} \times \text{Speed of second train}$

$$= \frac{7}{8} \times 100$$

$$= 87.5 \text{ km/hr}$$

Q-6.

A man on a cycle travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed for the first 320 km of the cycle is (c) 71.11 km/hr



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$$\Rightarrow \text{First travel}$$

- distance = 160 km.	- speed = 64 km/h.	- time $\Rightarrow \frac{160}{64} = 2.5 \text{ hr}$
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$$\Rightarrow \text{Second travel}$$

- distance = 80 km	- speed = 80 km/h.	- time $\Rightarrow \frac{80}{80} = 1 \text{ hr}$
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$$\begin{aligned} & - \text{Total distance} \Rightarrow 160 + 160 = 320 \text{ km.} \\ & - \text{Total time} \Rightarrow 2.5 + 1 = 3.5 \text{ hr.} \\ & - \text{Average Speed} = \frac{\text{Total distance}}{\text{Total time}} \\ & = \frac{320}{3.5} \\ & = 91.11 \text{ km.} \end{aligned}$$

Q.7 A can do work in 15 days and B for 20 days. If they work on it together for 4 days, then the fraction of the work that is left is : (d) 8/15

$\Rightarrow$  Work done by A in 7 day  $= \frac{1}{15}$

Work done by B in 7 day  $= \frac{1}{20}$

$\Rightarrow$  A & B together (work)  $= \frac{1}{15} + \frac{1}{20}$

$$= \frac{1 \times 4}{15 \times 4} + \frac{1 \times 3}{20 \times 3}$$

$$= \frac{4+3}{60} = \frac{7}{60}$$

$\Rightarrow$  In 4 days A & B together work :-



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⇒ The fraction of the work left :-

$$\frac{1}{15} \times 7 - \frac{7}{15} = \frac{15 - 7}{15} = \frac{8}{15}$$

Q-8

A takes 5 days to complete a job and B takes 10 days to complete the same job. In how much time they will complete the job together?

(a) 3.33 days

⇒ Work done by A in 1 day :-  $\frac{1}{5}$  of the job  
Work done by B in 1 day :-  $\frac{1}{10}$  of the job

⇒ Work done together in 1 day :-

$$\frac{1}{5} + \frac{1}{10} = \frac{1 \times 2}{5 \times 2} + \frac{1}{10}$$

$$= \frac{3}{10}$$

⇒ To complete the entire job :-

$$\text{Time} = \frac{5}{3}$$

combine work rate

$$\text{work done in 1 day} = \frac{1}{\frac{3}{10}} = \frac{10}{3} \text{ days} = 3.33 \text{ days}$$



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Q-9.

A can do piece of work in 4 hours; B and C together can do it in 3 hours, while A and C together can do it in 2 hours. How long will B alone take to do it? (C) 12 hrs

$\Rightarrow$  A's rate =  $\frac{1}{4}$  work per hour.

B+C's rate =  $\frac{1}{3}$  work per hour.

A+C's rate =  $\frac{1}{2}$  work per hour.

$\Rightarrow$  Now, A's rate + C's rate =  $\frac{1}{2}$

$$\frac{1}{c} = \frac{1}{2} - \frac{1}{4}$$

$$\frac{1}{c} = \frac{4-2}{8} = \frac{2}{8} = \frac{1}{4}$$

C's rate is  $\frac{1}{4}$

$\Rightarrow$  B's rate + C's rate =  $\frac{1}{3}$ .

$$\frac{1}{B} + \frac{1}{4} = \frac{1}{3}$$

$$\frac{1}{B} = \frac{1}{3} - \frac{1}{4}$$

$$\frac{1}{B} = \frac{4-3}{12} = \frac{1}{12}$$

B alone will take 12 hours.

B's rate =  $\frac{1}{12}$  work per hour.



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Q-10

A, B and C can complete a piece of work in 24, 6 & 12 days respectively. Working together, they will complete the same work in ?

(C) 24/7 days.

$\Rightarrow$  A's rate of work =  $\frac{1}{24}$  of work per day.

B's work rate =  $\frac{1}{6}$  of work per day

C's work rate =  $\frac{1}{12}$  of work per day

$$- \text{ Together, } \frac{1}{24} + \frac{1}{6} + \frac{1}{12}$$

$$= \frac{1}{24} + \frac{4}{24} - \frac{2}{24}$$

$$= \frac{1+4-2}{24}$$

$$= \frac{3}{24}$$

$$\text{Time} = \frac{7}{3/24} = \frac{24}{3} \text{ day} = 8 \text{ days.}$$