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Problems on trains Questions for CDS, CLAT, Bank & SSC Exams.

Problems on Trains Quiz 3

Directions: Kindly study the following Questions carefully and choose the right answer:

1. Two trains 165 m and 135 m long run at the speed of 70 km/hr and 38 km/hr respectively in opposite directions on parallel tracks. The time (in seconds) which they take to cross each other is:

- A. 4 sec B. 5 sec C. 10 sec D. 13 sec

2. Two trains is moving in opposite directions at 70 kmph and at 80 kmph. Their lengths are 1.3 km and 0.7 km respectively. The time taken by the slower train to cross the faster train in seconds is:

- A. 24 sec B. 48 sec C. 76 sec D. 102 sec

3. A train 75 m long passes a person, running at 6 kmph in the same direction in which the train is going in 15 seconds. The speed of the train is:

- A. 10 kmph B. 14 kmph C. 24 kmph D. 35 kmph

4. A train 105 m long passes a person, running at 2 kmph in the direction opposite to that of the train, in 2 seconds. The speed of the train is:

- A. 100 kmph B. 123 kmph C. 187 kmph D. 144 kmph

5. A train 150 metres long crosses a milestone in 15 seconds and crosses another train of the same length travelling in the opposite direction in 12 seconds. The speed of the second train in km/hr is

- A. 52 km/hr B. 56 km/hr C. 54 km/hr D. 58 km/hr

6. Two trains, A and B start from stations X and Y towards Y and X respectively. After passing each other, They take 4 hours 48 minutes and 3 hours 20 minutes to reach Y and X respectively. If train A is moving at 45 km/hr., then the speed of the train B is

- A. 60 km/hr B. 64.8 km/hr C. 54 km/hr D. 37.5 km/hr

7. A train covers a distance between station A and station B in 45 minutes. If the speed of the train is reduced by 5 km per hour, then the same distance is covered in 48 minutes. The distance between stations A and B is

- A. 60 km B. 64 km C. 80 km D. 55 km

8. A train 300 m long is running at a speed of 25 metres per second, it will cross a bridge 200 metres long in

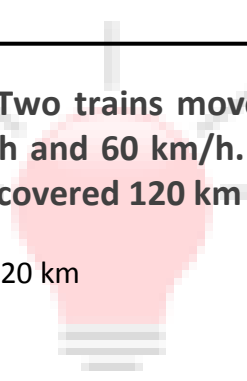
- A. 5 seconds B. 10 seconds C. 20 seconds D. 25 seconds

9. A train passes by a lamp post on a platform in 7 sec. and passes by the platform completely in 28 sec. if the length of the platform is 390 m. then length of the train (in metres) is

- A. 120 B. 130 C. 140 D. 150

10. Two trains move from station A and station B towards each other at the speed of 50 km/h and 60 km/h. At the meeting point, the driver of the second train felt that the train has covered 120 km more. What is the distance between A and B?

- A. 1320 km B. 1100 km C. 1200 km D. 960 km



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Correct Answers:

1	2	3	4	5	6	7	8	9	10
C	B	C	C	C	C	A	C	B	A

Explanations:

1. Relative speed = $(70 + 38) = 108$ km/hr {As the trains are moving in opposite directions}

$$\Rightarrow \left(108 \times \frac{5}{18}\right) = 30 \text{ m/sec.}$$

Distance covered in crossing each other = $(165 + 135) = 300$ m

$$\text{Reqd. time} = \left(300 \times \frac{1}{30}\right) \text{ sec} \Rightarrow \frac{30}{3} \text{ sec} = 10 \text{ sec.}$$

Hence, option C is correct.

2. Relative speed = $(70 + 80) = 150$ km/hr.

$$\Rightarrow \left(150 \times \frac{5}{18}\right) \text{ m/sec} \Rightarrow \left(\frac{125}{3}\right) \text{ m/sec.}$$

Distance covered = $(1.30 + 0.7)$ km = 2 km = 2000 m

$$\text{Reqd. time} = \left(\frac{3}{125} \times 2000\right) \text{ sec} = 48 \text{ sec}$$

Hence, option B is correct.

3.

$$\text{Speed of the train relative to Person} = \left(\frac{75}{15}\right) \text{ m/sec} = 5 \text{ m/sec}$$

$$\Rightarrow \left(5 \times \frac{18}{5}\right) \text{ km/hr} = 18 \text{ km/hr.}$$

Let the speed of the train be x kmph. then, relative speed = $(x - 6)$ kmph

$$\text{So, } (x - 6) = 18 \Rightarrow x = 24 \text{ kmph}$$

Hence, option C is correct.

4. Speed of the train relative to person

$$= \left(\frac{105}{2}\right) \text{ m/sec} \Rightarrow \left(\frac{105}{2} \times \frac{18}{5}\right) = 189 \text{ km/hr.}$$

Let speed of the train be x kmph.

$$\text{then, relative speed} \Rightarrow (x + 2) = 189$$

$$\Rightarrow x = 187 \text{ kmph.}$$

Hence, option C is correct.

5.

$$\text{Speed of the first train} = \frac{150}{15} = 10 \text{ m/sec}$$

Let the speed of the second train be x m/sec

$$\text{Relative speed} = (10 + x) \text{ m/sec}$$

$$\text{Length of train 1} + \text{length of train 2} = 150 + 150 = 300 \text{ mtr}$$

$$\text{In the second scenario equation will be like } \frac{300}{10 + x} = 12$$

$$\text{or, } 300 = 120 + 12x$$

$$\text{or, } x = \frac{180}{12} = 15 \text{ m/sec}$$

$$\therefore \text{ speed of the second train} = 15 \times \frac{18}{5} = 54 \text{ km/hr}$$

Hence, option C is correct.

6. To solve this question, we can apply a short trick approach

If two trains A and B start from P and Q towards Q and P, respectively and after passing each other they take T_1 and T_2 time to reach Q and P, respectively and speed of train A is given as a , then

$$\text{Speed of train B} = a \sqrt{\frac{T_1}{T_2}}$$

By the short trick approach, we get

$$\text{Speed of train} = 45 \times \sqrt{\frac{4 \text{ hrs } 48 \text{ min}}{3 \text{ hrs } 20 \text{ min.}}}$$

$$= 45 \times \sqrt{\frac{4 + \frac{48}{60}}{3 + \frac{20}{60}}}$$

$$= 45 \times \sqrt{\frac{4 + \frac{4}{5}}{3 + \frac{1}{3}}}$$

$$= 45 \times \sqrt{\frac{24 \times 3}{5 \times 10}} = 45 \times \frac{6}{5} = 54 \text{ km/hr.}$$

Hence, option C is correct.

7. To solve this question, we can apply a short trick approach

$$\text{Distance between 2 stations} = \left(\frac{X \times T_1 \times T_2}{T_2 - T_1} \right)$$

$$\text{Reducing speed } X = 5 \text{ km/hr} = \frac{5}{60} \text{ km/min.}$$

$$\text{Time duration before reducing the speed } T_1 = 45 \text{ min}$$

Time duration after reducing the speed $T_2 = 48$ min

$$\text{Distance between 2 stations} = \left(\frac{X \times T_1 \times T_2}{T_2 - T_1} \right)$$

$$= \left[\frac{5 \times 45 \times 48}{48 - 45} \right] \frac{1}{60}$$

After solving the above equation, we get

Distance = 60 km.

Hence, option A is correct.

8. To solve this question, we can apply a short trick approach;

"When a train passes a platform or crosses a bridge it should travel the length equal to the sum of the length of train and platform or bridge both"

$$\text{Reqd. time} = \frac{\text{Length of train} + \text{Length of Bridge}}{\text{Speed of train}}$$

Given

Speed of train = 25 m/sec

Length of train = 300 m, Length of bridge = 200 m

Crossing time of bridge = x

By the short trick approach, we get

$$x = \frac{300 + 200}{25} \Rightarrow x = \frac{500}{25} = 20 \text{ seconds.}$$

Hence, option C is correct.

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9. To solve this question, we can apply a short trick approach;

Length of train

$$= \frac{\text{Length of the platform}}{\text{Difference in time}} \times (\text{Time taken to cross a lamp post})$$

By the short trick approach, we get

$$= \frac{390}{28-7} \times (7) \Rightarrow \frac{390}{21} \times 7 = \frac{390}{3} = 130 \text{ m.}$$

Hence, option B is correct..

10. To solve this question, we can apply a short trick approach;

$$\text{Distance} = \text{Difference in distance} \times \frac{\text{Sum of speeds}}{\text{Difference in speeds}}$$

Given,

Speed of 1st train = 50 km/hr; Speed of 2nd train = 60 km/hr

Difference in distance = 120 km

By the short trick approach, we get

$$\text{Distance} = 120 \times \frac{(50 + 60)}{(60 - 50)} = 120 \times \frac{110}{10} = 1320 \text{ km.}$$

Hence, option A is correct.



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