



Trains Problems for RRB NTPC PDF

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Instructions

For the following questions answer them individually

Question 1

A frog jumps back and forth on two close moving trains of same length 140 meters moving at speeds 60kmph and 78 kmph in the same direction. If both the engines are next to each other when the frog starts jumping and initially the frog is at the starting point on the engine. It can jump only in the direction perpendicular to the train's movement. It takes 1 second to jump from one train to the other, stays there for 2 seconds and jumps back. What is the distance travelled by the frog in the direction of the movement of trains until the trains pass each other?

- A a
- B b
- C 345 meters
- D d

Answer: C

Explanation:

The frog jumps back and forth

Question 2

Two trains, one 150 m long and the other 130 m long, coming from opposite directions crossed each other in 7.2 seconds. The sum of speed of the two trains every hour would then be:

- A 280 km
- B 105 km
- C 70 km
- D 140 km

Answer: D

Question 3

A Train leaves Kazipet at 5 a.m. and reaches Bangalore at 3 p.m. Another train leaves Bangalore at 7 a.m. and reaches Kazipet at 5 p.m. When do the two trains meet? Assume that the trains travel at equal uniform speeds.

- A 1 p.m.
- B 12 noon
- C 11 a.m.
- D 10 a.m.

Answer: C

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Instructions

Question 4

Two trains start from stations A and B which are 280 km apart towards each other with their speeds in the ratio of 2:5. If they meet after 1 hour 20 minutes then what is the difference between the speeds ?

- A 45 km/hr
- B 60 km/hr
- C 75 km/hr
- D 90 km/hr

Answer: D

Explanation:

let the speeds be $2x$ and $5x$.

As both the trains are moving towards each other their relative velocity will be $2x + 5x = 7x$

Therefore $280/7x = 4/3$

$x = 120/4$

$x = 30$ km/hr

difference = $5x - 2x$

= $3x$

= 90 km/hr

Instructions

Question 5

Two trains start from stations A and B which are 200 km apart towards each other with their speeds in the ratio of 1:2. If they meet after 2 hours 40 minutes then what is the difference between the speeds ?

- A 15 km/hr
- B 20 km/hr
- C 25 km/hr
- D 30 km/hr

Answer: C

Explanation:

let the speeds be x and $2x$.

As both the trains are moving towards each other their relative velocity will be $x + 2x = 3x$

Therefore $200/3x = 8/3$

$x = 200/8$

$x = 25$ km/hr

difference = $2x - x$

= x

= 25 km/hr

Instructions

For the following questions answer them individually

Question 6

The ratio between the speeds of two trains is 3 : 4. The second train runs 800 km in 5 hrs, and speed of first train is:

- A 120 km/hrs
- B 140 km/hrs

C 180 km/hrs

D 160 km/hrs

Answer: A

Explanation:

Speed of second train = $\frac{800}{5} = 160$ km/hr

Ratio of speeds of first train to second train = 3 : 4

=> Speed of first train = $\frac{3}{4} \times 160 = 120$ km/hr

=> Ans - (A)

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Question 7

Two trains 85 m and 155 m long, run at the speeds of 62 km/h and 82 km/h respectively, in opposite directions on parallel tracks. The time which they take to cross each other is:

A 4 seconds

B 5 seconds

C 6 seconds

D 8 seconds

Answer: C

Explanation:

As both are travelling in opposite directions relative velocity = $62 + 82 = 144$ km/hr

$144 \times \frac{5}{18} = 40$ m/s

Total distance = $155 + 85$

= 240 m

Time taken = $240 / 40$

= 6 sec

Question 8

Two trains start at the same time, P from A to B and Q from B to A. If they arrive at B and A, respectively, $2\frac{1}{2}$ hours and 10 hours after they passed each other, and the speed of P is 90 km/hr, then the speed of Q in km/hr is?

A 80

B 75

C 45

D 60

Answer: C

Explanation:

Let the distance between A and B be 'd'

speed of Q be q

't' be the time taken for them to meet

$d / (90 + q) = t$

$d / (t + 10) = q$

$d / (t + (5/2)) = 90$

$$\begin{aligned}
 d &= 90t + 225 \\
 d &= 90t + qt \\
 d &= qt + 10q \\
 qt &= 225 \\
 q &= 9t \\
 t^2 &= 25 \\
 t &= 5 \text{ hours} \\
 q &= 9 \times 5 = 45 \text{ km/hr}
 \end{aligned}$$

Question 9

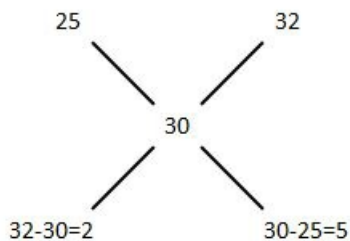
Two trains running in opposite directions cross a man standing on the platform in 25 seconds and 32 seconds respectively and they cross each other in 30 seconds. The ratio of their speed is:

- A 4 : 3
- B 2 : 5
- C 5 : 6
- D 1 : 3

Answer: B

Explanation:

Time taken by train-1 to cross the man = 25 seconds
 Time taken by train-2 to cross the man = 32 seconds
 Time taken by trains to cross each other = 30 seconds



Hence, Ratio of their speeds = 2 : 5.

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Question 10

The ratio of length of two trains is 6 : 5 and the ratio of their speed is 3 : 2. The ratio of time taken by them to cross a pole is:

- A 3 : 5
- B 4 : 5
- C 5 : 6
- D 5 : 8

Answer: B

Question 11

Speeds of two trains are in the ratio of 2 : 5. If the speed of the faster train is 120 kmph, find the difference between their speeds.

- A 56 kmph
- B 48 kmph
- C 72 kmph
- D 84 kmph

Answer: C

Explanation:

Let the speeds of the trains be $2x$ kmph and $5x$ kmph

Given that the speed of the faster train = 120 kmph

$$5x = 120$$

$$\Rightarrow x = 24$$

Difference between their speeds = $5x - 2x = 3x = 3 \times 24 = 72$ kmph.

Question 12

Speeds of two trains are in the ratio of 4 : 3. If the faster train travels 800 km in 4 hours, find the speed of the slower train.

- A 120 km/hr
- B 180 km/hr
- C 150 km/hr
- D 200 km/hr

Answer: C

Explanation:

Speed of the faster train = $800/4 = 200$ km/hr

Faster train: 4 → 200 km/hr

1 → 50 km/hr

Slower train: 3 → 150 km/hr

Hence, The speed of the slower train = 150 km/hr

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Question 13

Two trains, one 153 m long and the other 127 m long; coming from opposite directions crossed each other in 7.2 seconds. The combined speed of the two trains every hour would then be:

- A 140 km/h
- B 105 km/h
- C 70 km/h
- D 280 km/h

Answer: A

Question 14

Two trains are running on two parallel tracks with speeds 48 km/hr and 30 km/hr. The faster train passes a man standing in the slower train in 22 seconds. Then find the length of the faster train.

- A 220 m

- B** 110 m
C 150 m
D 200 m

Answer: B

Explanation:

Relative speed = $48 - 30 = 18 \text{ km/hr} = 18 \times \frac{5}{18} = 5 \text{ m/sec}$
 Faster train crosses a man in slower train in 22 seconds.
 Length of the faster train = $5 \times 22 = 110 \text{ m}$

Question 15

Two trains A and B start from Town X and Y going towards Y and X respectively. Towns X and Y are 900 kms apart and it takes A 9 hours to travel between X and Y. A starts at 6:00 am while B starts at 8:00 am. The ratio of speeds of A and B is 5:4. The trains cross each other at point P and then stay at Y and X respectively. The next day, B starts from X at 6:00 am while A starts from Y at 8:00 am. The trains cross each other at point Q. Find the distance between points P and Q.

- A** 110
B 125
C 100
D 150

Answer: C

Explanation:

Speed of A, $a = \frac{900}{9} = 100 \text{ km/hr}$

Speed of B, $b = \frac{4}{5} \times 100 = 80 \text{ km/hr}$

On day 1, distance travelled by A before B starts = $2 \times 100 = 200 \text{ kms}$.

When B starts moving, the relative speed between A and B, $r = 100 + 80 = 180 \text{ km/hr}$

When B starts moving, the distance between A and B = $900 - 200 = 700 \text{ kms}$.

Thus, time taken for the 2 trains to meet = $\frac{700}{180} = \frac{35}{9} \text{ hours}$.

Location of point P = $\frac{35}{9} \times 80$ from Y = $\frac{2800}{9} \text{ kms from Y}$

On day 2, distance travelled by B before A starts = $2 \times 80 = 160 \text{ kms}$.

When B starts moving, the relative speed between A and B, $r = 100 + 80 = 180 \text{ km/hr}$

When B starts moving, the distance between A and B = $900 - 160 = 740 \text{ kms}$.

Thus, time taken for the 2 trains to meet = $\frac{740}{180} = \frac{37}{9} \text{ hours}$.

Location of point Q = $\frac{37}{9} \times 100$ from Y = $\frac{3700}{9} \text{ kms from Y}$

Therefore, distance between P and Q = $\frac{3700}{9} - \frac{2800}{9} = 100 \text{ kms}$.

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