

Crack CSIR-NET Part A (Most Important Questions On Time & Distance)



1.The speed of a train is 220% of the speed of a car. The car covers a distance of 950 km in 19 hours. How much distance will the train cover in $3\frac{1}{2}$ hours?

- A. 380 km
- B. 385 km
- C. 375 km
- D. 285 km

2.A person covers 40% of a distance with a speed of 60 km/hr and the remaining with a speed 40 km /h. What is his average speed for the whole journey in km/h?

- A. $\frac{500}{11}$ B. $\frac{500}{13}$ C. $\frac{600}{13}$ D. $\frac{600}{11}$

3.A train is running at a speed of 99 km/h. If the train is 565 m long, then what will be the time (in seconds) taken by it to cross a 975 m long tunnel?

- A. 54
- B. 40
- C. 56
- D. 42

4.A train travels at a speed of 66 km/h and halts at five junctions for a certain time. It covers a distance of 1485 km in one day. For how long (in minutes) does the train stop at each junction, if it halts for the same period of time at all the junctions?

- A. 12
- B. 18
- C. 20
- D. 15

5.A man covers 18 km distance at 3km/hr speed, 20 km distance at 5 km/hr speed and 40 km distance at 20km/hr speed. Find his average speed during the journey.

- A. 6 km/hr
- B. 7.5 km/hr
- C. 6.5 km/hr
- D. 8 km/hr

6.If Ram walks at the speed of 3 km/hr, then he reaches his school 6 minutes late but if he walks at the speed of 4 km/hr, then he reaches 4 minutes before the scheduled time. What is the distance (in km) of his school from his house?

- A. 1.8
- B. 2
- C. 3.5
- D. 4

7. 9 hrs after a goods train passed a station, another train travelling at a speed of 72 km/hr following that goods train passed through that station. If after passing the station the train overtakes the goods train in 3 hours. What is the speed of the goods train?

- A. 21.6 km/hr
- B. 27 km/hr
- C. 18 km/hr
- D. 14.4 km/hr

8.Two trains start at the same time from two stations and proceed towards each other at speeds of 90 km/h and 70 km/h, respectively. When they meet, it is found that one train has travelled 140 km more than the other. What is the distance in km) between the two stations?

- A. 1100
- B. 1120
- C. 980
- D. 1200

9. A man is walking at a speed of 12 km/h. After every km, he takes rest for 3 minutes. How much time will he take to cover a distance of 6 km?

- A. 42 minutes
- B. 40 minutes
- C. 48 minutes
- D. 45 minutes

10. A car moves a distance of 600 km with uniform speed. The number of hours taken for the journey is $\frac{2}{3}$ of the number representing speed in km/h. The time taken to cover the distance is:

- A. 15 hours
- B. 18 hours
- C. 24 hours
- D. 20 hours

ANSWERS-

1. (B) 2. (B) 3. (C) 4. (B) 5. (C)
6. (B) 7. (C) 8. (B) 9. (D) 10. (D)

SOLUTIONS-

1. Speed of car = $\frac{950}{19} = 50$ km/h

∴ Speed of train = $50 \times \frac{220}{100} = 110$ km/h

Distance travelled by train in $3\frac{1}{2}$ hours = $110 \times 3.5 = 385$ km

2. Let the distance be 100 km

Then he has covered 40% of distance with 60km/hr

So 40 km has been covered with 60km/hr

Left over distance = 60 km

Speed = 40km/hr

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{100}{\frac{40}{60} + \frac{60}{40}} = \frac{100}{\frac{13}{6}} = \frac{600}{13} \text{ km/hr}$$

3. Speed of train = 99 kmph

Length of train = 565 m

Length of tunnel = 975 m

As we know, Speed of train = $\frac{\text{Length of train} + \text{Length of tunnel}}{\text{Time taken by train}}$

According to question:

$$\Rightarrow 99 \times \frac{5}{18} = \frac{565 + 975}{x}$$

$$\Rightarrow \frac{55}{2} = \frac{1540}{x}$$

$$\Rightarrow 55x = 3080$$

$$\Rightarrow x = 56 \text{ m}$$

Hence, Time required by train to cross the tunnel = 56 m

4. Distance travelled by train = 1485 km

Speed of train = 66 km/hr

Time taken by train to travel this distance = $\frac{1485}{66} = 22.5$ hours

But train covers this distance of 1485 km in one day.

Time for which train halt = 24 hours - 22.5 hours = 1.5 hours = 90 minutes.

Train halts for the same period of time at 5 junctions.

Time for which train stop at each junction = $\frac{90}{5} = 18$ minutes

5. Time taken in travelling 18 km at 3 km/hr = $T_1 = 18/3 = 6$ hr

Time taken in travelling 20 km at 5 km/hr = $T_2 = 20/5 = 4$ hr

Time taken in travelling 40 km at 20 km/hr = $T_3 = 40/20 = 2$ hr

Total Distance travelled = $18 + 20 + 40 = 78$ km

Total Time taken = $6 + 4 + 2 = 12$ hr

Hence, Average Speed = $78/12 = 6.5$ km/hr

6. Let the time taken by ram at normal speed is t minutes.

Distance = Speed X time

So, $3 \times (t+6) = 4 \times (t-4)$

$3t + 18 = 4t - 16$

$t = 34$ minutes

Distance = $3 \text{ km/hr} \times (34+6)/60$ hrs

= $3 \times 40/60$

= 2 km

7. Let the speed of goods train = x km/hr

It will cover distance in 9 hours = $9x$ km

Speed of second train = 72 km/hr

Relative speed = $(72 - x)$ km/hr

As second train overtakes the goods train in 3 hours after passing the station

So $3 = 9x / (72-x)$

$$\Rightarrow 1 = 3x / (72-x)$$

$$\Rightarrow 72-x = 3x$$

$$\Rightarrow 4x = 72$$

$$\Rightarrow x = 18 \text{ km/hr} = \text{Speed of goods train.}$$

Alternate Method:

To meet the goods train, the other train (travelling at 72 km/h) has to travel the same distance covered by goods train in 12 hrs, in 3 hrs.

Thus,

Let the speed of the goods train = x km/h

$$12 \cdot x = 3 \times 72$$

$$= x = 3 \times 72 / 12$$

$$= x = 18 \text{ km/h}$$

8. Let there are two trains P and Q with speeds of 90 km/h and 70 km/h respectively.

Clearly, Train P will cover 20 km extra in each hour.

$$\text{Time taken in covering extra 140 km by train P than train Q} = \frac{140}{20} = 7 \text{ hour}$$

It is given that when they meet, it is found that one train has travelled 140 km more than the other.

This means that both trains meet each other after 7 hours.

Distance (in km) between the two stations = Distance travelled by both trains in 7 hours =

$$(90 + 70) \times 7 = 160 \times 7 = 1120 \text{ km}$$

$$9. \text{ Time taken to cover 6 km without break} = \frac{6}{12} \times 60 = 30 \text{ minutes}$$

Interval in distance of 6 km = 5

Time of intervals = $5 \times 3 = 15$ minutes

Total time, he will take = $30 + 15 = 45$ minutes

10. Let speed and time are s and t respectively.

According to the question,

$$t = \frac{2}{3}s$$

$$\frac{t}{s} = \frac{2x}{3x}$$

Therefore, $2x \times 3x = 600$

$$6x^2 = 600$$

$$x^2 = 100$$

$$x = 10$$

Thus, reqd. time is $= 2x = 2 \times 10 = 20$ hours

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