



## Time and Distance Questions for SSC CHSL PDF

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### Instructions

For the following questions answer them individually

#### Question 1

Buses start from a bus terminal with a speed of 20 km/hr at intervals of 10 minutes. What is the speed of a man coming from the opposite direction towards the bus terminal if he meets the buses at intervals of 8 minutes ?

- A 3 km/hr
- B 4 km/hr
- C 5 km/hr
- D 7 km/hr

Answer: C

#### Explanation:

Distance between buses will  $20 \times \frac{10}{60} = \frac{10}{3}$  km.

Now man is travelling this distance in 8 min. with the relative speed of  $(20+x)$  (let's assume speed of man is  $x$  km/hr )

hence  $(20+x) = \frac{\frac{10}{3}}{\frac{8}{60}}$

$$x = 5$$

#### Question 2

By walking at  $\frac{3}{4}$  of his usual speed, a man reaches his office 20 minutes later than his usual time. The usual time taken by him to reach his office is

- A 75 minutes
- B 60 minutes
- C 40 minutes
- D 30 minutes

Answer: B

#### Explanation:

As distance is constant and we know  $s = \frac{d}{t}$  (where  $s$  is speed and  $t$  is time)

hence  $st = \text{constant}$

$$\text{or } s_1 t_1 = s_2 t_2$$

$$\text{or } s_1 t_1 = \frac{3}{4} s_1 (t_1 + 20)$$

$$\text{hence } t_1 = 60$$

#### Question 3

In a 100m race, Kamal defeats Bimal by 5 seconds. If the speed of Kamal is 18 Kmph, then the speed of Bimal is

- A 15.4 kmph
- B 14.5, kmph
- C 14.4 kmph
- D 14 kmph

Answer: C

#### Explanation:

As we know distance is constant for bimal and kamal and that is equal to 100 m.

hence  $V_{bimal} \times t_{bimal} = 100$

or  $V_{bimal} \times (t_{kamal} + 5) = 100$

where  $t_{kamal}$  will be  $\frac{\text{Distance}}{V_{kamal}}$  i.e.  $\frac{100m}{18kmph}$

so  $V_{bimal} \times (\frac{100m}{18kmph} + 5) = 100$

After solving above equation we will get  $V_{bimal} = 4 \frac{m}{s}$  or 14.4 kmph

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#### Question 4

A train, 240 m long crosses a man walking along the line in opposite direction at the rate of 3 kmph in 10 seconds. The speed of the train is

- A 63 kmph
- B 75 kmph
- C 83.4 kmph
- D 86.4 kmph

**Answer: C**

#### Explanation:

As man and train are coming to each other

and we assume speed of train =  $x$

hence its relative speed will be  $(x + 3)$

relative distance travelled = 240m = .24 km

time taken = 10 sec. =  $\frac{10}{3600}$  hr

$$\text{so } (x + 3) = \frac{.24}{\frac{10}{3600}}$$

solving the eq. we will  $x$  equals to 83.4 kmph

#### Question 5

The diameter of a wheel is 98 cm. The number of revolutions in which it will have to cover a distance of 1540 m is

- A 500
- B 600
- C 700
- D 800

**Answer: A**

#### Explanation:

In 1 revolution wheel will complete a distance of  $2\pi r = 2 \times \pi \times \frac{98}{2} = 308$  cm.

Hence to cover 1540 m., revolutions will be =  $\frac{1540 \times 100}{308} = 500$

#### Question 6

Walking at  $\frac{3}{4}$ th of his usual speed, aman is  $\frac{1}{2}$  hours late. his usual time to cover the same distance, in hours, is?

- A  $4\frac{1}{2}$
- B 4

C  $5\frac{1}{2}$

D 5

Answer: A

**Explanation:**

As distance is constant

Hence  $v_1 \times t_1 = \frac{3v_1}{4} \times (t_1 + \frac{3}{2})$  (Where  $v_1$  is speed,  $t_1$  is time taken to travel)

On solving above equation, we will get  $t_1 = \frac{9}{2}$

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**Question 7**

Four runners started running simultaneously from a point on a circular track. They took 200 seconds, 300 seconds, 360 seconds and 450 seconds to complete the round. After how much time do they meet at the starting point for the first time?

A 1800 seconds

B 3600 seconds

C 2400 seconds

D 4800 seconds

Answer: A

**Explanation:**

Meeting at the first time will be L.C.M. of time taken by individuals to complete i.e. L.C.M. of 200,300,360 and 450 will be equal to 1800 sec.

**Question 8**

Walking at  $\frac{6}{7}$ th of this usual speed a man is 25 minutes too late. His usual time to cover this distance is

A 2 hours 30 minutes

B 2 hours 15 minutes

C 2 hours 25 minutes

D 2 hours 10 minutes

Answer: A

**Explanation:**

Let the initial speed and time be  $s, t$  respectively,

then speed and time in the next case are  $\frac{6s}{7}$  and  $(t+25)$

As distance = speed \* time, and distance travelled in both cases is the same,

$$(\frac{6s}{7}) * (t+25) = s * t$$

Solving the above equation results in  $t=150\text{min}$

**Question 9**

Walking at 5 km/hr a student reaches his school from his house 15 minutes early and walking at 3 km/hr he is late by 9 minutes. What is the distance between his school and his house?

A 5 km

B 8 km

C 3 km

D 2 km

**Answer: C**

**Explanation:**

Let the time and distance be  $t$  mins and  $d$  respectively,

In the first case:

Total time taken =  $(t - 15)$  mins =  $(t-15)/60$  hrs.

Distance travelled =  $5*(t-15)/60$

In the second case:

Total time taken =  $(t + 9)$  mins =  $(t+9)/60$  hrs.

Distance travelled =  $3*(t+9)/60$

So,  $5*(t-15)/60 = 3*(t+9)/60$ ,

Solving the above equation we get,  $t=51$

So,  $d=3*(51+9)/60$

=3 KMs

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### Question 10

With average speed of 40 km/hour, a train reaches its destination in time. If it goes with an average speed of 35 km hour, it is late by 15 minutes. The total journey is

A 30 km

B 40 km

C 70 km

D 80 km

**Answer: C**

**Explanation:**

Let the time and distance be  $t$  mins and  $d$  km respectively,

If it goes with an average speed of 40 km/hour, a train reaches its destination in time.

So, distance =  $(40*t)/60$

If it goes with an average speed of 35 km hour, it is late by 15 minutes.

So, distance =  $35*(t+15)/60$

In both the cases, distance is same,

So,  $40*t = 35*(t+15)$

Solving the above equation gives  $t = 105$

and  $d = (40*105)/60 = 70$

### Question 11

A rail road curve is to be laid out on a circle. What radius should be used if the track is to change direction by  $25^\circ$  in a distance of 40 metres?

A 91.64 metres

B 90.46 metres

C 89.64 metres

D 93.64 metres

**Answer: A**

**Explanation:**

With 25 degree angle length of arc will be  $(r \times \theta \text{ in radian}) = 40\text{m}$  (where  $r$  is radius of arc and  $\theta$  will be angle made by it)

Now solving above equation, we will get  $r = 91.64 \text{ m}$ .

**Question 12**

Two cars are moving with speeds  $v_1$  and  $v_2$  towards a crossing along two roads. If their distance from the crossing be 40 m and 50 m at an instant of time, then they do not collide, if their speeds are such that

A  $v_1 : v_2 \neq 4 : 5$

B  $v_1 : v_2 \neq 5 : 4$

C  $v_1 : v_2 = 16 : 25$

D  $v_1 : v_2 = 25 : 16$

**Answer:** A

**Explanation:**

they will collide if time to reach the crossing is same.

it is the case when

time taken by 1st car = time taken by 2nd car.

$$40/v_1 = 50/v_2$$

$$v_1/v_2 = 4/5$$

but condition not to collide is  $v_1/v_2 \neq 4/5$ .

so the answer is option A.

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**Question 13**

A man rides at the rate of 18 km/hr, but stops for 6 mins. to change horses at the end of every 7th km. The time that he will take to cover a distance of 90 km is

A 6 hrs.

B 6 hrs 12 min.

C 6 hrs 18 min.

D 6 hrs 24 min.

**Answer:** B

**Explanation:**

Speed of man = 18 km/h

Total distance = 90 km

$$\text{As he stops after 7th km, } \Rightarrow 90 = (12 \times 7) + 6$$

$\Rightarrow$  He stops 12 times in the journey.

$$\text{Total stoppage time} = 12 \times 6 = 72 \text{ min}$$

$$\text{Real time} = \frac{90}{18} = 5 \text{ hours}$$

$$\therefore \text{Required time taken} = 5\text{hr} + 72 \text{ min}$$

$$= 6 \text{ hrs } 12 \text{ min}$$

=> Ans - (B)

**Question 14**

A farmer travelled a distance of 61 km in 9 hrs. He travelled partly on foot at the rate of 4 km/hr and partly on bicycle at the rate of 9 km/hr. The distance travelled on foot is

- A 14 km
- B 171cm
- C 16 km
- D 15 km

**Answer: C**

**Explanation:**

Let the distance travelled on foot be  $x$  km

=> Distance travelled on bicycle =  $(61 - x)$  km

Time taken to travel on foot =  $\frac{x}{4}$  hrs

Time taken to travel on bicycle =  $\frac{61-x}{9}$  hrs

$$\Rightarrow \text{Total time} = 9 = \frac{x}{4} + \frac{61-x}{9}$$

$$\Rightarrow 9x + 244 - 4x = 324$$

$$\Rightarrow 5x = 324 - 244$$

$$\Rightarrow x = \frac{80}{5} = 16 \text{ km}$$

**Question 15**

Raj and Prem walk in opposite directions at the rate of 3 km and 2 km per hour respectively. How far will they be from each other after 2 hours ?

- A 10 km
- B 8 km
- C 6 km
- D 2 km

**Answer: A**

**Explanation:**

Since Raj and Prem walks in opposite directions, their relative speed will be sum of their individual speeds i.e.

Speed,  $s = 3+2 = 5$  kmph

Now, distance covered in 2 hours = time \* speed

$$= 5*2 = 10 \text{ km}$$

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