

Quiz Date: 12<sup>th</sup> April 2020

Q1. A train travelling at 48 km/hr crosses another train, having half its length and travelling in opposite direction at 42 km/hr in 12 seconds. It also passed a railway platform in 45 seconds. The length of the railway platform is

- (a) 200 m
- (b) 300 m
- (c) 350 m
- (d) 400 m
- (e) 450 m

Q2. A train crosses a pole in 10 seconds and a platform, which is 40% longer than the length of train in 24 seconds. If the length of platform is 140 m, what is speed of the train?

- (a) 36 m/s
- (b) 5 m/s
- (c) 10 m/s
- (d) 15 m/s
- (e) 20 m/s

Q3. The distance between two stations A and B is 900 km. A train starts from A and moves towards B at an average speed of 30 km/hr. Another train starts from B, 20 minutes earlier than the train at A, and move towards A at an average speed of 40 km/hr. How far from A will the two trains meet?

- (a) 380 km
- (b) 320 km
- (c) 240 km
- (d) 359 km
- (e) 520 km

Q4. Two trains pass each other on parallel lines. Each train is 100 metres long. When they are going in the same direction, the faster one takes 60 seconds to pass the other completely. If they are going in opposite directions they pass each other completely in 10 seconds. Find the speed of the slower train in km/hr.

- (a) 30 km/hr
- (b) 42 km/hr
- (c) 48 km/hr
- (d) 60 km/hr
- (e) 54 km/hr

Q5. A steamer goes downstream from one port to another in 4 h. It covers the same distance upstream in 5 h. If the speed of the stream is 2 km/h, then find the distance between the two ports.

- (a) 50 km
- (b) 60 km

- (c) 70 km
- (d) 80 km
- (e) 90 km

Q6. The speed of a boat in still water is 24kmph and the speed of the stream is 4kmph. The time taken by the boat to travel from A to B downstream is 36 minutes less than the time taken by the same boat to travel from B to C upstream. If the distance between A and B is 4 km more than the distance between B and C, what is the distance between A and B?

- (a) 112 km
- (b) 140 km
- (c) 56 km
- (d) 84 km
- (e) 28 km



Q7. A swimmer swims from a point A against a current for 5 minutes and then swims backwards in favour of the current for next 5 minutes and comes to the point B. If AB is 100 metres, the speed of the current (in km per hour) is :

- (a) 0.4
- (b) 0.2
- (c) 1
- (d) 0.6
- (e) 0.8

Q8. A boat takes 8 hours more than to cover a certain distance in upstream to cover the same distance in downstream. If speed of boat increased by 50% of its previous speed, then boat takes only three hours more than to cover same distance in upstream to cover in downstream. Find the ratio of speed of stream to speed of boat?

- (a) 1 : 3
- (b) 1 : 4
- (c) 1 : 2
- (d) 2 : 3
- (e) 2 : 5

Q9. A policeman starts to chase a thief. When the thief goes 10 steps the policeman moves 8 steps. 5 steps of the policeman is equal to 7 steps of the thief. The ratio of the speeds of the policeman and the thief is

- (a) 25 : 28  
 (b) 25 : 26  
 (c) 28 : 25  
 (d) 56 : 25  
 (e) None of these

Q10. A car driver leaves Bangalore at 8.30 A.M. and expects to reach at a place 300 km from Bangalore at 12.30 P.M. At 10.30 he finds that he has covered only 40% of the distance. By how much he has to increase the initial speed of the car in order to keep up his schedule ?

- (a) 45 km/hr  
 (b) 40 km/hr  
 (c) 35 km/hr  
 (d) 30 km/hr  
 (e) None of these

Directions (11-15): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer

- (a) if  $x > y$   
 (b) if  $x \geq y$   
 (c) if  $x < y$   
 (d) if  $x \leq y$   
 (e) if  $x = y$  or no relation can be established between  $x$  and  $y$

Q11. I.  $35x^2 - 53x + 20 = 0$   
 II.  $56y^2 - 97y + 42 = 0$

Q12. I.  $x = \sqrt[3]{4913}$   
 II.  $13y + 3x = 246$

Q13. I.  $x^2 - 5x - 14 = 0$   
 II.  $y^2 + 7y + 10 = 0$

Q14. I.  $x^2 - 3481 = 0$   
 II.  $3y^2 = \sqrt[3]{216000}$

Q15. I.  $5x^2 + 2x - 3 = 0$   
 II.  $2y^2 + 7y + 6 = 0$

### Solutions

S1. Ans. (d)

Sol. Let length of first train =  $2\ell$  m

$\therefore$  length of second train =  $\ell$  m

$$\therefore \frac{(48+42)5}{18} = \frac{3\ell}{12}$$

$$25 = \frac{3\ell}{12}$$

$$\ell = 100 \text{ m}$$

Let length of platform = x m

$$\therefore \frac{48 \times 5}{18} = \frac{(200+x)}{45}$$

$$600 = 200 + x$$

$$x = 400 \text{ m}$$

S2. Ans.(c)

Sol. Length of platform = 140 m

Length of train = x m

$$x + x \times \frac{40}{100} = 140$$

$$x = 100 \text{ m}$$

$$\text{Speed} = \frac{100}{10} = 10 \text{ m/sec}$$



S3. Ans (a)

Sol. Distance covered by second train

$$\text{In 20 min} = \frac{20}{60} \times 40 = \frac{80}{6} \text{ km}$$

$$\text{Remaining distance} = 900 - \frac{40}{3} = \frac{2660}{3} \text{ km}$$

$$\text{Time taken to cover this distance Together (or time of meeting of both trains)} = \frac{2660}{3(40+30)} =$$

$$\frac{38}{3} \text{ h}$$

Distance covered by train A in  $\frac{38}{3}$  h

$$= \frac{38}{3} \times 30 = 380 \text{ km}$$

S4. Ans.(a)

Sol.

Let speed of faster train = x km/hr

Let speed of slower train = y km/hr

$$\text{When both move in same direction} = \frac{60}{60 \times 60} = \frac{200}{(x-y) \times 1000}$$

$$x - y = 12 \dots \dots \dots (i)$$

$$\text{When both move in opposite direction} = \frac{10}{60 \times 60} = \frac{200}{(x+y) \times 1000}$$

$x + y = 72 \dots \dots \dots$  (ii)

Solving (i) and (ii)

$x = 42 \text{ km/hr}$

$y = 30 \text{ km/hr}$

speed of slower train = 30 km/hr

S5. Ans.(d)

Sol. let Speed of boat in still water is  $x \text{ km/hr}$  and distance covered is  $d \text{ km}$

Speed of the stream = 2 km/hr

$\therefore \frac{d}{x+2} = 4 \Rightarrow d - 4x = 8 \dots \dots (1)$

And,  $\frac{d}{x-2} = 5 \Rightarrow d - 5x = -10 \dots \dots (2)$

From  $eq^n (1)$  and  $eq^n (2)$

$x = 18 \text{ kmph}$

From  $eq^n (1)$

$d - 18 \times 4 = 8$

$d = 80 \text{ km}$

S6. Ans.(c)

Sol. let distance from B to C is  $x \text{ km}$

ATQ,  $\frac{x}{20} - \frac{x+4}{28} = \frac{36}{60}$

$\frac{7x-5x-20}{140} = \frac{3}{5}$

$2x - 20 = 84$

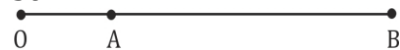
$2x = 104$

$x = 52 \text{ km}$

$\therefore$  Distance from A to B = 56 km

S7. Ans.(d)

Sol.



$AB = OB - OA$

Let speed of boat in still water is  $x \text{ kmph}$  and speed of stream is  $y \text{ kmph}$

$100 = \frac{5}{60}(x + y) - \frac{5(x-y)}{60}$

$1200 = x + y - x + y$

$y = 600 \text{ m/h}$

$= 0.6 \text{ km/h}$

S8. Ans(c)

Sol.

Let speed of boat be  $a \text{ km/hr}$

Speed of stream be  $b \text{ km/hr}$

And distance be 'D' km



ATQ

$$\frac{D}{(a-b)} - \frac{D}{(a+b)} = 8$$

$$D = 8(a^2 - b^2)/2b \text{ ----- (i)}$$

Also, new speed of boat =  $\frac{3a}{2}$  km/hr

$$\frac{D}{(3a-2b)} - \frac{D}{(3a+2b)} = \frac{3}{2}$$

$$D = 3(9a^2 - 4b^2)/8b \text{ ----- (ii)}$$

From (i) & (ii) we get

$$27a^2 - 12b^2 = 32a^2 - 32b^2$$

$$20b^2 = 5a^2$$

$$a^2 : b^2 = 4 : 1$$

$$b : a = 1 : 2$$

S9. Ans.(c)

Sol.

Let policeman goes 'x' distance in one step and thief goes 'y' distance in one step

5 steps of policeman = 7 steps of thief

$$5x = 7y$$

$$x : y = 7 : 5$$

Let speed of policeman = p

And speed of thief = q

$$\frac{10 \text{ steps of thief}}{q} = \frac{8 \text{ steps of policeman}}{p}$$

$$\frac{10y}{q} = \frac{8x}{p}$$

$$\frac{p}{q} = \frac{8x}{10y} = \frac{8 \times 7}{10 \times 5} \Rightarrow \frac{p}{q} = \frac{28}{25}$$

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S10. Ans.(d)

Sol.

Distance covered by car between 8 : 30 a.m. and 10 : 30 a.m.

$$= \frac{40}{100} \times 300 = 120 \text{ km}$$

$$\Rightarrow \text{speed of car} = \frac{120 \text{ km}}{2 \text{ hour}} = 60 \text{ km/hr}$$

Now remaining 180 km distance has to be covered in 2 hr, so required speed =  $\frac{180}{2} = 90 \text{ km/hr}$

Required increment in speed = 90 km/hr - 60 km/hr

$$= 30 \text{ km/hr}$$

S11. Ans (c)

$$\text{Sol. } 35x^2 - 25x - 28x + 20 = 0$$

$$5x(7x - 5) - 4(7x - 5) = 0$$

$$x = \frac{4}{5}, \frac{5}{7}$$

$$56y^2 - 49y - 48y + 42 = 0$$

$$7y(8y - 7) - 6(8y - 7) = 0$$

$$y = \frac{6}{7}, \frac{7}{8}$$

$$x < y$$

S12. Ans (a)

$$\text{Sol. } x = 17$$

$$\text{Putting in eq. (ii) } 13y = 195, y = 15, x > y$$

S13. Ans (b)

$$\text{Sol. } x^2 - 7x + 2x - 14 = 0$$

$$x(x - 7) + 2(x - 7) = 0$$

$$x = 7, -2$$

$$y^2 + 5y + 2y + 10 = 0$$

$$y = -2, -5$$

$$x \geq y$$

S14. Ans (e)

$$\text{Sol. } x = 59, -59$$

$$3y^2 = 60, y = \sqrt{20}, -\sqrt{20}$$

No relation can be established

S15. Ans (a)

$$\text{Sol. } 5x^2 + 5x - 3x - 3 = 0$$

$$5x(x + 1) - 3(x + 1) = 0$$

$$x = \frac{3}{5}, -1$$

$$2y^2 + 4y + 3y + 6 = 0$$

$$2y(y + 2) + 3(y + 2) = 0$$

$$y = \frac{-3}{2}, -2$$

$$x > y$$

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