Quiz Date: 14th June 2020

Q1. A cruise ship X is 380 m long and travels at a speed of 32 kmph in still water. Another cruise ship Y which is 180 m long travels at 40 kmph in still water. The two ships pass each other traveling in opposite directions, in a region where the speed of current is 8m/s. How long (in seconds) will it take them to pass each other?
(a) 42 sec
(b) 28 sec
(c) 35 sec
(d) 24 sec
(e) 21 sec

Q2. A boat goes certain distance downstream and then return $\frac{3}{4}^{th}$ of the distance upstream. It takes $\frac{3}{2}$ of the time in upstream than in downstream. If boat increases its speed by $33\frac{1}{3}\%$ and cover a distance of 60 km in downstream and then return upstream in 16 hours, find increased speed of boat?
(a) 6 km/hr
(b) 14 km/hr
(c) 16 km/hr
(d) 12 km/hr
(e) 8 km/hr

Q3. A Boat takes $\frac{D}{48}$ hours more to cover a certain distance in upstream than in downstream. If speed of Boat in upstream is 16 km/h, then find speed of boat in still water. (D is the distance covered by boat in upstream and in downstream).
(a) 24 km/h
(b) 30 km/h
(c) 16 km/h
(d) 20 km/h
(e) 18 km/h

Q4. Krishna covers a certain distance by train at 25 km/hr. and the equal distance on foot at 4 km/hr. If the time taken by him for the whole journey be 5 hrs and 48 minutes, how much total distance did he cover ?
(a) 30 km
(b) 40 km
(c) 25 km
(d) 35 km
(e) None of these

Q5. A car covers total 140 km distance, it covers some part of the journey at the speed of 6 km/hr and the rest part of journey at 10 km/hr. If speed of 6 km/hr is replaced by 10 km/hr and speed 10 km/hr is replaced by 6 km/hr, it covers 8 km more distance in the same time. Find time taken by the car to cover 140 km distance and also find average speed of the car.

(a) 8 hr, $5\frac{4}{9}\frac{\text{km}}{\text{hr}}$
(b) 15 hr, $30\frac{7}{9}$ km/hr
(c) 18 hr, $7\frac{7}{9}\frac{\text{km}}{\text{hr}}$
(d) 10 hr, $10\frac{9}{17}$ km/hr
(e) None

Q6. Two trains A & B are running in opposite directions and cross each other 8 sec. Train A crosses train B in 56 sec when both trains are running in same direction. If length of train B is increased by 25%, then train A cross train B in 62 sec while running in same direction. If length of trains A is 60 meters more than length of train B, then in how much time train A will cross a bridge, whose length is 25 % more than length of train A?
(a) 20 sec
(b) 10 sec
(c) 15 sec
(d) 14 sec
(e) 18 sec

Q7. Distance between Delhi and Jaipur is 300 km. Aman starts from Delhi and Rajiv from Jaipur at same time. After two hours, Aman realized he was travelling slow and therefore increased his speed by 25% and meet Rajiv at a point 108 km from Delhi. Find the increased speed of Aman, if Rajiv derived at a constant speed of 75 km/hr.
(a) 40 km/hr
(b) 50 km/hr
(c) 60 km/hr
(d) 55 km/hr
(e) 65 km/hr

Q8. A boat travels with the direction of the current from point A to B and then returns against the current and stop at point C. Distance between B and C is 75% of distance between A and B and boat takes 9 hours to cover total distance. If distance between A to B is 40 Km and Speed of current is 2 km/hr, then find speed of boat in still water ?
(a) 6 km/hr
(b) 8 km/hr
(c) 4 km/hr

(d) 9 km/hr
(e) 10 km/hr

Q9. Deepika rides her bike at an average speed of 30 km/hr and reaches her destination in 6 hours. Heena covers the same distance in 4 hours. If Deepika increases her average speed by 10 km/hr and Heena increases her average speed by 5 km/hr, what would be the difference in their time taken to reach the destination ?
(a) 54 minutes
(b) 1 hours
(c) 40 minutes
(d) 45 minutes
(e) None of these

Q10. A train X departs from station A at 11.00 am for station B, which is 180 km away. Another train Y departs from station B at 11.00 am for station A. Train X travels at an average/speed of 70 kms/hr and does not stop anywhere until it arrives at station B. Train Y travels at an average speed of 50 kms/hr, but has to stop for 15 minutes at station C, which is 60 kms away from station B enroute to station A. Ignoring the lengths of the train, what is the distance, to the nearest km, from station A to the point where the trains cross each other?
(a) 112
(b) 118
(c) 120
(d) 140
(e) None of these

Direction (11-15): Read the data carefully and answer the question.
There are three sitting halls, three pantry, three meeting rooms and one HR & one CEO room in the office of Adda247. All halls, pantry, meeting rooms, HR room & CEO rooms are rectangular in shape and area of each hall is same, each pantry is same, each meeting room is same and area is different for HR & CEO room. Breadth of hall & pantry are 33 m & 15 m respectively, while ratio of length of hall to that of pantry is 22 : 7. The difference between perimeter of a hall & a pantry is 126 m, while area of a meeting room having breadth of 14 m is 77 m^2 less than that of area of a pantry room. Ratio of magnitude of perimeter of HR room to area of that room is 19 : 88 and breadth of that room is 16 m. Length & breadth of CEO room is 4 m & 2 m more than that of length and breadth of HR room respectively. (Consider only 2D figure)

Q11. The radius of a cylindrical vessel is equal to half of the length of a pantry. Its volume is 4158 m^3 and cost of polishing it is Rs. 5 per m^2, then find the total cost of polishing the vessel including its top and bottom surfaces.
(a) 7225 Rs.
(b) 7425 Rs.
(c) 7050 Rs.
(d) 7825 Rs.
(e) 7625 Rs.

Q12. The ratio of radius of two circular parks is 5: 6 and sum of circumference of both circular parks is 154m more than perimeter of a CEO room. If cost of fencing per meter with wire is Rs. 25, then find the total cost of fencing the smaller circular park?
(a) 2560 Rs.
(b) 2456 Rs.
(c) 2226 Rs.
(d) 2288 Rs.
(e) 2750 Rs.

Q13. Total perimeter of a meeting room and a hall is what percent of area of a CEO room (consider only its numerical value)?
(a) 50%
(b) $52\frac{2}{9}\%$
(c) $53\frac{8}{9}\%$
(d) $55\frac{5}{9}\%$
(e) $57\frac{2}{9}\%$

Q14. All three meeting rooms are rebuilt so that breadth of each meeting room is increased by 100% and length is decreased by 10 m. If each meeting room is divided into four square cabins and decorated with wood which costs Rs 12.5 per/m^2, then find the total cost of decoration of all square cabins built in the three meeting rooms ?
(a) 7290 Rs.
(b) 7230 Rs.
(c) 7240 Rs.
(d) 7350 Rs.
(e) 7560 Rs.

Q15. Find the difference between perimeter of a HR room & perimeter of a pantry?
(a) 4 m
(b) 8 m
(c) 12 m
(d) 16 m
(e) 18 m

Solutions

S1. Ans.(b)
Sol.
When they are passing each other, total distance will be (380+180) m = 560m.
Speed of X =$32 \times \frac{5}{18}$ = 8.89 m/s
Speed of Y =$40 \times \frac{5}{18}$= 11.11m/s
Speed of current will be added to one's speed and will be reduced from the other's speed hence, cause no change in the net speed.
Net speed = (8.89+11.11) = 20 m/s.
Required time = 560/20 =28 sec.

S2. Ans.(e)
Sol. Let distance travelled by boat in downstream be D km and speed of boat in still water be x km/hr and speed of current be y km/hr
ATQ,
$\frac{\frac{3}{4}\times D}{(x-y)} = \frac{3}{2} \times \frac{D}{(x+y)}$
$\frac{1}{2(x-y)} = \frac{1}{x+y}$
x = 3y
New speed of boat = 3y + 3y × $\frac{1}{3}$
= 4 y km/hr
$\frac{60}{(4y+y)} + \frac{60}{(4y-y)} = 16$
$\frac{12}{y} + \frac{20}{y} = 16$
y = $\frac{32}{16} = 2\ km/hr$
Increased speed of boat = 4×2 = 8 km/hr

S3. Ans.(d)
Sol.
Let speed of boat in still water = x km/h
And speed of stream = y km/h
ATQ
$\frac{D}{x-y} - \frac{D}{x+y} = \frac{D}{48}$
$\frac{D}{16} - \frac{D}{x+y} = \frac{D}{48}$
Dividing by D
$\frac{1}{16} - \frac{1}{x+y} = \frac{1}{48}$
$\Rightarrow \frac{1}{x+y} = \frac{1}{16} - \frac{1}{48}$
$\frac{1}{x+y} = \frac{1}{24}$
$x + y = 24$

$x - y = 16$
On solving x = 20 km/h

S4. Ans.(b)
Sol.
Total distance = x km
Distance by train $= \frac{x}{2}$ km
Distance by Feet $= \frac{x}{2}$ km
Time taken to cover $\frac{x}{2}$ by train $= \frac{x}{50}$ hours
Time taken to cover $\frac{x}{2}$ by foot $= \frac{x}{8}$ hours
$\frac{x}{50} + \frac{x}{8} = 5\frac{48}{60}$
$x = 40$ km

S5. Ans.(c)
Sol. Let first part of journey takes 't_1' hour at 6 km/hr and rest part of journey takes 't_2' hour at 10 km/hr
$\therefore 6t_1 + 10t_2 = 140$ ____(i)
After replacing the speed
$10t_1 + 6t_2 = 140 + 8$
$10t_1 + 6t_2 = 148$ _____(ii)
⇒ On solving (i) and (ii)
$t_1 = 10$ hour and t_2 = 8 hour
Time required in total journey = $t_1 + t_2$
= 18 hours.
Average speed of the car = $\frac{140}{18}$ km/hr
= $7\frac{7}{9}$ km/hr

S6. Ans(e)
Sol.
Let length of train B be L meters and length of train A be (L + 60) meters
And also let the speed of train B and train A be V m/s and U m/s respectively.
When both trains travelling in opposite direction
$\frac{(L+L+60)}{8} = U + V$
$\frac{2L+60}{8} = U + V$ ...(i)
When both train running in same directions —
$\frac{L+L+60}{56} = U - V$
$\frac{(2L+60)}{56} = U - V$ ...(ii)
When length of train B is increased and both trains are running in same direction —
$\frac{(1.25L+L+60)}{62} = U - V$
$\frac{2.25L+60}{62} = U - V$ ...(iii)

From (i) and (iii)

$2U = \frac{2L+60}{8} + \frac{2.25L+60}{56}$

$U = \frac{16.25L+480}{112}$ ...(iv)

From (iii) and (ii)

$\frac{2L+60}{56} = \frac{(2.25L+60)}{62}$

L= 180

After solving (iii), (iv)

U = 30 m/s and V = 22.5 m/s

Length of train A = 180 + 60 = 240 meter

Length of bridge = $240 + 240 \times \frac{25}{100}$= 300 meters

Time taken by train A to cross bridge

$= \frac{300+240}{30}$

$= \frac{540}{30}$

= 18 sec

S7. Ans.(b)

Sol.

Let initial speed of Aman is x km/hr.

Distance travelled by him in 2 hours is 2x km.

While distance travelled by Rajiv in these 2 hours is 75 × 2 = 150 km

When both of them meet, Aman had travelled a distance of 108 km.

Distance travelled by Aman with 25% increase in his speed = (108 – 2x) km

And his increased speed = $x(\frac{125}{100}) = \frac{5x}{4}$ km/hr

If Aman had travelled 108 km, Rajiv had travelled 192 km.

192 – 150 = 42 km after 2 hours

Time taken by Rajiv to travel 42 km

$= \frac{42}{75} = \frac{14}{25}$ hours

This is equal to time taken by Aman to travel (108 – 2x) km

$\frac{(108-2x)}{\frac{5}{4}x} = \frac{14}{25}$

$108 - 2x = \frac{14\times5x}{25\times4}$

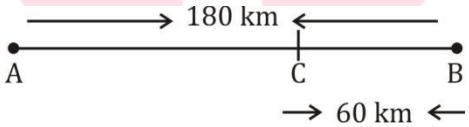
$108 = \frac{7}{10}x + 2x$

$\frac{27}{10}x = 108 \Rightarrow x = 40$ km/hr.
Therefore increased speed of Aman was
$= \frac{5}{4} \times 40$
$= 50$ km/hr

S8. Ans.(b)
Sol.
Let speed of boat in still water be x km/hr
Water Current speed = 2 km/hr
Distance between B to C = $40 \times \frac{75}{100} = 30\ km$
ATQ —
$= \frac{40}{(x+2)} + \frac{30}{(x-2)} = 9$
$40x - 80 + 30x + 60 = 9x^2 - 36$
$9x^2 - 70x - 16 = 0$
$x = 8$ km/hr

S9. Ans.(a)
Sol. Distance $= 30 \times 6 = 180$ km
Heena's speed $= \frac{180}{4} = 45$ km/hr
After increasing their speed,
Required difference $= \left(\frac{180}{40} - \frac{180}{50}\right) \times 60 = 0.9 \times 60$
$= 54$ minutes.

S10. Ans.(a)
Sol.



← 11.00 am Y
X 11.00 a.m. →
Time taken by Y for distance cover from B to C with stoppages
$= \left(\frac{6}{5} + \frac{1}{4}\right) hrs = \frac{24+5}{20} = \frac{29}{20} hrs.$
Say they cross each other at x distance from A
$\therefore \frac{x}{70} = \frac{29}{20} + \frac{120-x}{50}$
$\therefore \frac{x}{50} + \frac{x}{70} = \frac{29}{20} + \frac{12}{5}$
$\Rightarrow \frac{12x}{350} = \frac{29+48}{20} \Rightarrow \frac{12x}{35} = \frac{77}{2}$
$\therefore x = \frac{77}{2} \times \frac{35}{12} = 112.29 \approx 112$ km

S(11-15);
Let length of each hall & each pantry be 22l & 7l respectively

ATQ –
$2(22l + 33) - 2(7l + 15) = 126$
$44l + 66 - 14l - 30 = 126$
$30l = 90$
$l = 3$ m
Length of hall = $22 \times 3 = 66\ m$
Length of pantry = $7 \times 3 = 21\ m$
Area of pantry room = $21 \times 15 = 315$ m^2
Let length of meeting room = a m
$315 - 14 \times a = 77$
$14a = 238$
$a = 17$ m
Let length of HR room be x m
$\frac{2(x+16)}{16 \times x} = \frac{19}{88}$
$176x + 2816 = 304x$
$128x = 2816$
$x = 22$ m
Length of CEO room = 22 + 4 = 26 m
Breadth of CEO room = 16 + 2 = 18 m

	Length (m)	**Breadth (m)**
Hall	66	33
Pantry	21	15
Meeting room	17	14
HR room	22	16
CEO room	26	18

S11. Ans(b)
Sol.
Let height of cylinder is 'h' m
Given,
$\pi r^2 h = 4158$
$\frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times h = 4158$
$346.5\ h = 4158$
$h = \frac{4158}{346.5}$
$h = 12\ m$
Cost of polishing the vessel = $5(2\pi rh + 2\pi r^2)$
$= 5 \times 2 \times \frac{22}{7}(10.5 \times 12 + 10.5 \times 10.5)$
$= 33.75 \times 44 \times 5$
$= 7425$ Rs.

S12. Ans(e)
Sol.

Let radius of larger & smaller circular park be 6x & 5x respectively
ATQ –
$2 \times \frac{22}{7}(5x + 6x) - 2(26 + 18) = 154$
$\frac{484x}{7} = 154 + 88$
$484x = 1694$
x = 3.5 m
Total cost of fencing the smaller circular park = $25 \times (2 \times \frac{22}{7} \times 5 \times 3.5)$
$= 25 \times 110$
= 2750 Rs.

S13. Ans(d)
Sol.
Total perimeter of a meeting room and a hall= $2 \times (17 + 14) + 2 \times (66 + 33)m$
$= 260\ m$
Area of a CEO room=$26 \times 18 = 468\ m^2$
Required %= $\frac{260}{468} \times 100 = \frac{500}{9} = 55\frac{5}{9}\%$

S14. Ans (d)
Sol.
New breadth of meeting room = $2 \times 14 = 28\ m$
New length of meeting room = $17 - 10 = 7\ m$
Area of each meeting room = $28 \times 7 = 196\ m^2$
Area of each square cabin = $\frac{196}{4} = 49\ m^2$
Four cabins in one meeting room
So, total cabins in all the three meeting rooms = $3 \times 4 = 12$
Total cost of all square cabins built in the three meeting rooms
= $12 \times 49 \times 12.5 = 7350\ Rs.$

S15. Ans(a)
Sol.
Perimeter of a HR room = 2(22 + 16) = 76 m
Perimeter of a pantry = 2(21 + 15) = 72 m
Required difference = 76 – 72 = 4 m