MBA PIONEER 2024

QUANTITATIVE APTITUDE

DPP: 16

Distance Time and Speed - 2

Q1 A boatman can row his boat in still water at a speed of 8 km/hr. He can also row 45 km upstream and 33 km downstream in total 12 hours. How much time (in hours) will he take to row 55 km upstream and 22 km downstream?

(A) 11 hours (B) 13 hours

(C) 9 hours (D) 10 hours

Q2 Two trains of equal length are running on parallel lines in the same directions at 64 km/hr and 54 km/hr respectively. The faster train completely passes the slower train in 18 seconds. The length of each train (in metres) is:

Q3 A train 1250 meter long crosses a platform whose length is 950 meters in 40 seconds. If a dog is running at a speed of 3 m/s in the same direction as the train and the train is 234 meters away from the dog, then in how much time (in seconds) will the train catch the dog?

Q4 A boat goes 75 km while going upstream in 3 hours and 60 km while going downstream in 2 hours. Find the speed of the stream (in Km/hr).

Q5 A motorboat with a constant speed, moves in a river. When the boat moves downstream, its speed increases by 16.67% of its value when no current is flowing. If it takes 1 minute to cover a distance of 0.6 km going upstream, what is the speed (in m/s) of the boat in still water?

Q6 A train moving at a rate of 54 km/hr. crosses a standing man in 12 seconds. It will cross a platform 40 meters long, in how much time (in sec)?

(A) 12

(B) 15

(C) $14\frac{2}{3}$

(D) $18\frac{2}{3}$

Q7 A train 60 metres long passes a platform 120 metres long in 12 seconds. The speed of the train in km/hr is:

(A) 12 kmph (B) 15 kmph

(C) 54 kmph (D) 30 kmph

Q8 Speed of the duck in still water is $4\frac{1}{2}$ meters per minute and the speed of the stream is $\frac{3}{4}$ meter per minute. The duck rows 105 meters upstream and come back to the starting point in how much time?

(A) 20 minutes (B) 48 minutes

(C) 45 minutes (D) 30 minutes

Q9 If the ratio of the effective upstream and downstream speed of a boat is 2:3. If the stream speed doubles, the boat takes 2 hrs to cover a distance of 70 km downstream, what is the still water speed of the boat?

(A) 15 km/hr (B) 20 km/hr

(C) 25 km/hr (D) 30 km/hr

Q10 A man takes 6 hours to row 96 km upstream and 4 hours to row the same distance downstream. Find the speed of the boat in still water.

(A) 8 km/hour (B) 20 km/hour

(C) 12 km/hour (D) 15 km/hour

Q11 In still water, an Oarsman can swim 9 km/hr. If the velocity of the stream is 6 km/hr, then what time (in hrs) will take for him to swim to a place 20 km upstream and back?
(A) $9\frac{1}{3}$ hrs
(B) $8\ \frac{8}{9}$ hrs
(C) 8 hrs
(D) 10 hrs

Q12 Speed of a boat in still water is 11.5 km/hr more than stream speed. If boat covers 450 km downstream in 18 hours, then find speed of stream.
(A) 5.25 km/hr (B) 6.25 km/hr
(C) 6.75 km/hr (D) 5.95 km/hr

Q13 A sailboat goes downstream starting with one port onto the next in 2 hours. It covers the same distance upstream in 3 hours. If the speed of the stream is 4 km/h, the distance between the two ports is:
(A) 52 km (B) 48 km
(C) 16 km (D) 24 km

Q14 A boat can travel a downstream distance of 72 Km in six hours and upstream distance of 84 Km in 14 hours. Find the difference between downstream distance travelled by the boat in 8 hours and distance travelled by the boat in still water in six hours.
(A) 42 Km (B) 36 Km
(C) 54 Km (D) 60 Km

Q15 A student calculated his time to reach school from home while swimming 2.4 km in still water. One day there was stream of speed 4 km/h and he swam along the stream and reached school 1.2 min early. Find the swimming speed (in still water) of student.
(A) 22 km/h
(B) 18 km/h
(C) 20 km/h
(D) Cannot be determined

Q16 Train A can cross a pole and bridge 375 meters long in 12 seconds and 27 seconds, respectively. Train A crosses train B, which is moving in the opposite direction to train A in 13 seconds. Find the speed of train B if its length is 5% less than the length of train A.
(A) 63 km/h (B) 81 km/h
(C) 90 km/h (D) 72 km/h

Q17 A boat is traveling downstream in a river at 40 km/h. If after traveling half the distance, the speed of the stream increases by 40%, then the boat would reach its destination in 15 minutes less than the usual time. Find the original speed of the stream, given that the total distance is 420 km.
(A) 5 km/h (B) 10 km/h
(C) 7 km/h (D) 4 km/h

Q18 The sum of the boat's speed in still water and the speed of the current is 30 kmph. The boat covers 360 km against the stream in z hours, and the same boat covers 600 km along with the stream in z hours. What is the distance covered by the boat in still water in 5 hours?
(A) 120 km (B) 150 km
(C) 180 km (D) 210 km

Q19 Train A running at the speed of 90 km/hr crosses Ranjay who is running in the opposite direction at the speed of 18 km/hr in 24 sec. The length of train B is 140 m more than that of train A and is running at the speed of 126 km/hr and crosses a platform in 40 sec. Find the length of the platform.
(A) 420 m (B) 480 m
(C) 460 m (D) 540 m

Q20 The downstream speed of boat A is same as the upstream speed of boat B. Speed of stream is 10 km/hr and the sum of the speed of the boat A and B in still water is 80 km/hr. Find the total time taken by boat B to cover 150 km downstream and boat A to cover 50 km upstream.

(A) 6 hours
(B) 5 hours
(C) 4 hours 30 minutes
(D) 4 hours

Q21 Two people are walking along a railway track while a train passes them. The first one walks at 6.3 km/h. The other one walks at 7.2 km/h. The train requires 10.4 and 10.5 seconds respectively to overtake them. What is the speed of the train if both persons are walking in the same direction as the train?

(A) 104.5 km/h (B) 72.2 km/h
(C) 96.4 km/h (D) 100.8 km/h

Q22 Mr. Valentino covers one-third of the distance by a fastest motorbike at the speed of 150 km/hr, half of the remaining distance by a taxicab at the speed of 75 km/hr, and the remaining distance by cycle at the speed of 25 km/hr. What is the average speed for the entire journey?

(A) 50 km/hr (B) 75 km/hr
(C) 80 km/hr (D) 85 km/hr

Q23 The speed of a boat in still water is 20% more than that of the current. After traveling for 4 hours downstream, it traveled for 4 hours upstream, increasing the boat's speed by 15 km/h. The distance covered by the boat downstream is 175% more than that of upstream. Find the original downstream speed of the boat.

(A) 75 km/hr (B) 80 km/hr
(C) 55 km/hr (D) 40 km/hr

Q24 In still water, the speed of boat A is less than that of boat B, and the difference in their speeds is equal to the speed of the stream. If the upstream speed of boat A is half of the downstream speed of boat B, then find the ratio of the speed of boat A to that of boat B in still water.

(A) 2: 3 (B) 5: 6
(C) 4: 5 (D) 3: 4

Q25 Varun and Shraddha leave points m and n towards n and m respectively simultaneously and travel in the same route. After meeting each other on the way, Varun takes 27 hours to reach his destination, while Shraddha takes 48 hours to reach her destination. If the speed of Varun is 56 km/hr, what is the speed of Shraddha?

(A) 36 km/hr (B) 42 km/hr
(C) 48 km/hr (D) 52 km/hr

Q26 Train A has 10 compartments and length of each compartment is 30 metres. Train A can cross a bridge of length 260 metres in 28 seconds. With only (Y-2) number of compartments, it takes only 25 seconds to cross the bridge. Find the time taken by train A of original length to cross train B in opposite direction, if length of train B is 20Y and speed of train B is 25% more than train A

(A) 12 seconds
(B) 10 seconds
(C) $\frac{100}{9}$ seconds
(D) $\frac{25}{2}$ seconds

Q27 A train travels at the speed of 40 km/hr from station A to station B and reaches 5 minutes late. The distance between station A to station

B is 10km. By what percentage should the train's speed be increased if it starts 2 minutes late from station A and still manages to reach station B at its actual scheduled time?

(A) 50 (B) 66.7
(C) 80 (D) 87.5

Q28 Tejas express (400m long), and Rajdhani express (300 m long) are travelling on parallel tracks in opposite directions. It takes Tejas express 40 seconds to cross a biker (whose speed is half as much as Tejas express) moving in the same direction. Rajdhani express can cross the same biker moving in the opposite direction in 10 seconds. Find the time taken by the two trains to cross each other.

(A) 23.33 seconds (B) 35.67 seconds
(C) 17.5 seconds (D) 9.83 seconds.

Q29 Two trains A and B have started from Delhi simultaneously in the same direction. Train A travels at 64km/h while the speed of train B is 12.5% less than that of the speed of train A. Thirty minutes later, a third train C starts from Delhi in the same direction. It overtook train A 50 minutes later than it overtook train B, then the speed of the train C would be.

(A) 80 km/h (B) 72 km/h
(C) 88 km/h (D) 96 km/h

Q30 A boatman is moving on a river and moves 2 km upstream from a point. After travelling 2 kilometres, he dropped a floating tube. He continued moving for another hour and then turned around and moved back to the starting point in 1 hr. The boatman and the tube arrived at the starting point at the same time. The boatman had been moving with constant speed. How fast did the water in the river flow (in Km/hr)?

(A) 1 (B) 2
(C) 5 (D) 8

Answer Key

Q1	(B)
Q2	25
Q3	4.5
Q4	2.5
Q5	12
Q6	(C)
Q7	(C)
Q8	(B)
Q9	(C)
Q10	(B)
Q11	(C)
Q12	(C)
Q13	(B)
Q14	(A)
Q15	(C)
Q16	(D)
Q17	(A)
Q18	(A)
Q19	(D)
Q20	(B)
Q21	(D)
Q22	(A)
Q23	(C)
Q24	(C)
Q25	(B)
Q26	(C)
Q27	(D)
Q28	(C)
Q29	(A)
Q30	(A)

Q1 Text Solution:

Let the speed of the stream = x km/hr

According to the question,

$\frac{45}{(8-x)} + \frac{33}{(8+x)} = 12$

$\Rightarrow \frac{360+45x+264-33x}{64-x^2} = 12$

$\Rightarrow \frac{624+12x}{64-x^2} = 12$

$\Rightarrow 52 + x = 64 - x^2$

$\Rightarrow x^2 + x - 12 = 0$

$\Rightarrow (x + 4)(x - 3) = 0$

$\Rightarrow x = 3$ or -4

But x cannot be negative.

So, x =3

Hence, the required time

$= \frac{55}{(8-3)} + \frac{22}{(8+3)}$

= 11 + 2

= 13 hours

Q2 Text Solution:

The relative speed of train is

= 64-54 = 10 Km/hr = $10 \times \frac{5}{18} = \frac{25}{9}$ m/s

In 18 secs the total distance travelled is $18 \times \frac{25}{9}$ = 50 m.

Therefore, the length of each train is = $\frac{50}{2}$ = 25 m.

Q3 Text Solution:

The train can cover (1250+ 950) m distance in 40 seconds which means the speed of the train

$= \frac{2200}{40}$

= 55 m/s

Relative speed of the dog and train = 55 - 3 = 52 m/s

To cover the distance of 234 meters, it will take

$= \frac{234}{52}$ = 4.5 seconds

Q4 Text Solution:

Speed of boat in downstream = $\frac{60}{2}$ = 30km/hr

Speed of boat in upstream = $\frac{75}{3}$ = 25km/hr

Speed of stream = $\frac{(Speed\ of\ boat\ in\ downstream - Speed\ of\ boat\ in\ upstream)}{2}$

$= \frac{(30-25)}{2}$

= 2.5 km/hr

Q5 Text Solution:

Let the speed of the boat be V, and the speed of the current be v.

Speed of the boat when it is moving downstream = (V + v) m/s

We are given that,

v = 16.67% of V = $\frac{V}{6}$

or, $\frac{v}{V} = \frac{1}{6}$

Or, V = 6v

When the boat goes upstream, its effective speed = (V − v) = 5v

We have 5v = Effective speed of the boat going upstream,

= 0.6 km/min

= 10 m/s

∴ v = 2 m/s

∴ V = 6v = 12 m/s

Therefore, the required speed (in m/s) of the boat in still water is 12 m/s.

Q6 Text Solution:

Speed of the train = 54 kmph

$= 54 \times \frac{5}{18}$ = 15 m/s

Length of train = 15 ×12

= 180 m

Required time

$\frac{180+40}{15} = \frac{220}{15} = \frac{44}{3}$

$= 14\frac{2}{3}$ seconds

Hence, the correct answer is option (3).

Q7 Text Solution:

Speed of train = (Length of the platform + length of the train) ÷ (Time taken in crossing)

$= \frac{120+60}{12} = \frac{180}{12} = (\frac{18}{5} \times 15)$ kmph

= 18 × 3 kmph

= 54 Kmph

Hence, the correct answer is option (3).

Q8 Text Solution:

Speed of the duck in still water = 4.5 m/min

Speed of the stream = 0.75 m/min

So, upstream speed of the duck = 4.5-0.75 = 3.75 m/min and downstream speed of the duck = 4.5+0.75 = 5.25 m/min

So, required time = $\frac{105}{3.75} + \frac{105}{5.25}$ = 48 minutes

Q9 Text Solution:

Let the still water speed of the boat be "b km/hr and the stream speed be 'r' km/hr.

Given, $\frac{(b-r)}{(b+r)} = \frac{2}{3}$

3b - 3r = 2b+ 2r

b = 5r

Given,

b + 2r = $\frac{70}{2}$

b + 2r = 35

7r = 35

r = 5

Still water speed of the boat = 5×5 = 25 km/hr

Q10 Text Solution:

Let the speed of the boat be 'x' kmph and that of the stream be 'y' kmph.

So, $\frac{96}{(x-y)}$ = 6 and $\frac{96}{(x+y)}$ = 4

or, x – y = 16 and x + y = 24

or, x = 20 km/hour

Hence, option B is correct.

Q11 Text Solution:

Required time

$\frac{20}{9+6} + \frac{20}{9-6}$

$= \frac{20}{15} + \frac{20}{3}$

$= \frac{120}{15}$

= 8

Hence, the correct answer is option (3).

Q12 Text Solution:

Here, speed of boat in still water - stream speed = upstream speed = 11.5 km/hr

And, downstream speed = $\frac{450}{18}$ = 25 km/hr

Therefore, stream speed = $\frac{(25-11.5)}{2}$ = 6.75 km/hr

The correct answer is option (C).

Q13 Text Solution:

Let the distance from one port to another is = d

Let the speed of the sailboat is = x

Given, time downstream = 2 hr

∵ Time = $\frac{\text{distance}}{(Speed\ in\ downstream)}$

Speed of sailboat downstream = speed of boat + speed of the stream

∴ speed of sailboat in downstream = x + 4

∴ 2 = $\frac{d}{(x+4)}$

⇒ d = 2x + 8

Given, time in upstream = 3 hr

∵ Time = $\frac{\text{distance}}{(Speed\ in\ upstream)}$

Speed of sailboat upstream = speed of the boat – speed of the stream

∴ speed of sailboat upstream = x – 4

∴ 3 = $\frac{d}{(x-4)}$

⇒ d = 3x – 12

Distance will be equal so

⇒ 2x + 8 = 3x – 12

⇒ x = 20

∵ Distance = speed × time

⇒ d = (20 – 4) × 3

⇒ d = 48 km

Hence, the correct answer is option (2).

Q14 Text Solution:

Let, speed of the boat in still water = x Km/h

And speed of the stream = y Km/h

$\frac{72}{(x+y)}$ = 6

x + y = 12 .....(i)

$\frac{84}{(x-y)}$ = 14

x - y = 6 ..... (ii)

Adding (i) and (ii)

x + y + x - y = 12 +6

=> 2x = 18

=> x = $\frac{18}{2}$

=> x = 9 Km/h and y = 3 km/hr

Downstream distance travelled by the boat in 8 hours = 12 × 8 = 96 Km

Distance travelled by the boat in still water in six hours = 9 × 6 = 54 Km

Required difference = 96-54 = 42 Km

Q15 Text Solution:

Let the swimming speed in still water = x km/h

Let calculated time = 't' min

According to the question,

t = $\frac{2.4}{x}$ × 60 ..... (1)

(t-1.2) = $\frac{2.4}{x+4}$ × 60 ..... (2)

From (1) and (2), we have

($\frac{2.4}{x}$ × 60 - 1.2) = $\frac{2.4}{x+4}$ × 60

$\frac{120}{x}$ - 1 = $\frac{120}{x+4}$

x = 20

Thus, the swimming speed in still water = 20 km/h

Hence, option (C) is the correct answer.

Q16 Text Solution:

Let the length of train A be 'x' meter.

So according to question: = x/12 = (x+375)/27

27x= 12x + 4500

15x = 4500

x = 300

So, the speed of train A = 300/12 = 25 m/s

Length of train B = 0.95 x 300 = 285 meter

Let the speed of train B be 'S' m/s.

So according to question: 13 (S+25) = 300 + 285

S + 25 = 585/13

S + 25 = 45

S = 20

So, the speed of train B = 20 m/s = 20 x 18/5 = 72 km/h

Hence, option d is the correct option.

Q17 Text Solution:

Let the original speed of the stream be 'x' km/h.

Time taken to cover the first half of the journey = (210/40) = 5.25 hours

Time taken to cover the second half of the journey = 5.25 hours - 15 minutes = 5 hours

So, speed of the boat in the second half of the journey = (210/5) = 42 km/h

So, net change in speed = 42 - 40 = 2 km/h

So, 1.4x-x=2

0.4x = 2

So, x = 5

Therefore, original speed of the steam = 5 km/h

Hence, option a is the correct option.

Q18 Text Solution:

Let the speed of the boat in still water be 'x' kmph and speed of the current be 'y' kmph, then,

x + y = 30

As each of the journeys has been covered in equal time, we have,

$\frac{360}{x-y} = \frac{600}{x+y}$

$\frac{x+y}{x-y} = \frac{5}{3}$

$x = 4y$

Substituting the value of 'x' in the above equation we have

$4y + y = 30$

$y = 6$

$x = 24$

Thus, in 5 hours the boat will cover

24×5

$= 120$ *km in still water*

Q19 Text Solution:

Option (4) is correct.

The relative speed of train A when crossed Ranjay

= 90+18 = 108 km/hr

= 108×$\frac{5}{18}$ m/s

= 30 m/s

Length of train A= 30×24 = 720 m

Length of train B = 720 + 140 = 860 m

Let the length of the platform be x m

860 + x = 126 × $\frac{5}{18}$ × 40

860 + x = 1400

x = 540 m

Q20 Text Solution:

Let the speed of the boat A and B in still water be A and B km/hr respectively

Given, speed of the stream = 10 km/hr

According to the question,

A+ 10 = B-10

=> B-A = 20 ----- (1)

Also given, B+ A = 80 ---- (2)

On solving the above two equations, we get A = 30 and B = 50

=> Downstream speed of boat B = 50 + 10 = 60 km/hr

=> Upstream speed of boat A = 30 - 10 = 20 km/hr

Hence, required time = $\frac{150}{60}$ + $\frac{50}{20}$ = 5 hours

Option (2) is correct.

Q21 Text Solution:

Speed of 1st person = 6.3 km/h = 6.3× $\frac{5}{18}$ m/s = 1.75 m/s

Speed of 2nd person = 7.2 km/h = 7.2 × $\frac{5}{18}$ m/s = 2 m/s

Let the speed of the train be x m/s

⇒ Length of train = (x – 1.75) × 10.4 = (x – 2) × 10.5

⇒ 10.4x – 18.2 = 10.5x – 21

⇒ x = 28 m/s

∴ Speed of the train 28 × $\frac{18}{5}$ = 100.8 km/h

Hence, the correct answer is option (4).

Q22 Text Solution:

Let the total distance be = d km.

Distance covered at 150 km/hr = $\frac{d}{3}$

Distance covered at 75 km/hr = $\frac{1}{2}$ (d− $\frac{d}{3}$) = $\frac{d}{3}$

Distance covered at 25 km/hr = d - $\frac{d}{3}$ - $\frac{d}{3}$ = $\frac{d}{3}$

Average speed

$= \frac{d}{\frac{d}{3(150)}+\frac{d}{3(75)}+\frac{d}{3(25)}}$

$= \frac{d}{\frac{d}{450}+\frac{d}{225}+\frac{d}{75}}$

$= \frac{d}{\frac{d}{50}}$

= 50 km/h.

Q23 Text Solution:

Let the speed of the current be 'x' km/hr,

Therefore, the speed of the boat in still water = 1.2x km/hr

Downstream distance traveled by boat = (x + 1.2x) x 4 = 8.8x km

Upstream distance covered by the boat = (1.2x + 15 - x) 4 = (0.8x + 60) km

According to the question,

$\{\frac{8.8x-0.8x-60}{0.8x+60}\}$ = 1.75

Or, x = 25 km/hr

Therefore, original downstream speed of the boat = 2.2x = 55 km/hr

Hence, option c is the correct option.

Q24 Text Solution:

Let the speed of boats A and B in still water are 'a' and 'b' respectively.

So, the speed of the stream = (b – a)

Upstream speed of boat A = a – (b – a) = 2a – b

Downstream speed of boat B = b + (b – a) = 2b – a

From the question:

2a – b = 1/2 * (2b - a)

4a – 2b = 2b – a

5a = 4b

Required ratio = a: b = 4: 5

Hence, option c is the correct option.

Q25 Text Solution:

Since both of them started simultaneously, let us say that they met after 't' hours, then we have,

$t^2 = 27 \times 48$

$t = 36$

This means that Varun covered a distance in 36 hours which was eventually covered by Shraddha in 48 hours which means that the ratio of times taken is 3 : 4

Thus the ratio of speeds would be 4 : 3 respectively

Given that Varun has a speed 56 kmph, thus Shraddha would have a speed of 56 x $\frac{3}{4}$ = 42 kmph

Q26 Text Solution:

Length of train A = 30 × 10 = 300 metres

Let the speed of train A be SA m/sec

According to the question,

28 = $\frac{(260 + 300)}{SA}$

SA = 20 m/sec

Length of train with (Y - 2) compartments = 30 × (Y-2) metres

According to the question,

25 = $\frac{(260+30Y-60)}{20}$

=> 500 = 200 + 30Y

=> Y = 10

Speed of train B = $\frac{5}{4}$ × 20 = 25 m/sec

Length of train B = 20 × Y = 200 metres

Required time = $\frac{(300+ 200)}{(20+25)}$ = $\frac{100}{9}$ seconds

Q27 Text Solution:

The time is taken by the train on the first day to reach station B from Station A

= $\frac{\text{Distance}}{\text{Speed}\backslash}$

= $\frac{10}{40}$

= 0.25 hours

= 15 minutes.

∵ The train is 5 minutes late, in this case, the actual scheduled time would be 10 minutes

On the next day, the train starts 2 minutes later than the previous day. That is, in order to reach Station B on time, the train must reach in 8 minutes.

∴ On the second day, the required speed of the Train

= $\frac{\text{Distance}}{\text{Time}\backslash}$

= $\frac{10}{8}$

= $\frac{600}{8}$ km/h

= 75 km/h

∴ The increase in speed is 35 km/hr.

So, the percentage increase = $\frac{35}{40}$ × 100 = 87.5%

Therefore, the required percentage increase is 87.5%

Option D is correct.

Q28 Text Solution:

Let the speed of the Tejas express be '2x' m/s and Rajdhani express be 'y' m/s.

Speed of the biker = x m/s.

It takes Tejas express 40 seconds to cross a biker i.e cover 400m at the relative speed.

So, **the relative speed of Tejas Express and the biker** = 2x-x = x m/s.

400/x = 40

x = 10 m/s----(1)

and 2x = 20 m/s ------ (2)

Similarly, Time taken by Rajdhani express to cross the biker (300m) = 10 seconds

10 = 300/x+y

OR x+y = 30 -------(3)

Put (1) in (3) :

y = 20

Now, time taken for two trains to cross = Total Distance ÷ Relative speed

= 700/40

= 17.5 seconds

Hence, option C is the correct answer.

Q29 Text Solution:

Speed of train A = 64 km/h

Speed of train B = 12.5% less than the speed of train A = 64(1-12.5%) = 56 km/h

In thirty minutes, train A had travelled = 32 km

Similarly, train B had travelled = 28 km

Let the speed of train C be 'x'

Time taken by train C to overtake train B = $\frac{\text{Distance}}{\text{Speed}}$

= $\frac{28}{(x-56)}$

Time taken by train C to overtake train A = $\frac{32}{(x-64)}$

Given,

$\frac{28}{(x-56)} + \frac{50}{60} = \frac{32}{(x-64)}$ ∵ (50 minutes = $\frac{50}{60}$ hrs)

x = 80 km/h

So, Option (1) is correct.

Q30 Text Solution:

It is obvious that the tube is carried away by the flow of the water (i.e., it has the same speed as the water). So, if the boatman is travelling away from the tube for an hour (upstream), it will take him another hour to reach back to the tube again (downstream, where he reaches the tube at the moment it is passing to the starting point). So, in that 2-hr time, the tube has moved 2 km towards to the starting point. The water in the river flows at a speed of 2 km/2hr, i.e., 1 km/hr.