

SRI KRISHNAVENI BANKING COACHING CENTRE

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TIME & DISTANCE

Max.Marks : 50

Time :1/2 Hour

- In what time a 435 m long train running at 58 kmph can cross a single pole?
A. 7.5 sec B. 15 sec
C. 27 sec D. 25 sec
E. None of these
 - A man covers a distance of 675 km. His speed for the first half is 80 kmph and for the remaining distance it is 120 kmph. What is his average speed for the entire distance?
A. 100 kmph B. 95 kmph
C. 90 kmph D. 96 kmph
E. None of these
 - A 145m long train running a speed of 69 kmph overtakes another train which is running in the same direction at a speed of 35 kmph in 27 seconds. Find the length of second train?
A. 145 m B. 255 m C. 110 m D. 150 m
E. None of these
 - A man covers 220 km in 8 hours and another 300 km at an average speed of 60 kmph. Find the average speed of man for total distance?
A. 43.75 kmph B. 55 kmph
C. 45 kmph D. 40 kmph
E. None of these
 - A train crosses a bridge of length 290 meters in 27 seconds. Find the length of the train if it runs at 90 kmph speed?
A. 385 m B. 270 m
C. 245 m D. 675 m
E. None of these
 - Two trains start from two stations A and B towards each other at 8 am with speed 65 kmph and 80 kmph respectively. If they cross each other at 4 pm, what is the distance between A and B?
A. 1160 km B. 1250 km
C. 1325 km D. can't be determined
E. None of these
 - A train crosses a bridge of length 800 m in 100 seconds and a platform of length of 400 m in 60 seconds. Find the length of the train?
A. 80 m B. 200 m C. 100 m
D. can't be determined E. None of these
 - A man goes from his house of office in a car. If his speed in 60 kmph, he reaches his office 3 minutes late however if his speed is 80 kmph he is early by 5 minutes. Find the distance between his house and office?
A. 32 km B. 25 km C. 60 km
D. can't be determined E. None of these
 - In what time A 350 m long train running at 108 kmph speed can overtake A 175 m long train running at 36 kmph speed?
A. 26.25 sec B. 12.5 sec
C. 21.75 sec D. 32.15 sec
E. None of these
 - A train running at speed of 54 kmph crosses a platform double its length in 32 seconds. What is the length of the platform in meters?
A. 480 B. 320 C. 160
D. can't be determined E. None of these
- Boat Problems**
- In one hour, a boat goes 11 km along the stream and 5 km against the stream. The speed of the boat in still water (in km/hr) is?
A. 3 B. 5 C. 8 D. 9
E. None of these
 - A boat running down stream covers a distance of 16 km in 2 hours while for covering the same distance upstream, it takes 4 hours. What is the speed of the boat in still water?
A. 4 km/hr B. 8 km/hr
C. 6 km/hr D. Data inadequate
E. None of these.

13. A man can row upstream at 8 kmph and down stream at 13 km/ph. The speed of the stream is?

- A. 2.5 km/hr B. 4.2 km/hr
C. 5 km/hr D. 10.5 km/hr
E. None of these

14. A man takes twice as long to row a distance against the stream as to row the same distance in favour of the down stream. The ratio of speed of boat (in still water) and the stream is?

- A. 2 : 1 B. 3 : 2 C. 4 : 3 D. 3 : 1
E. None of these

15. A man's speed with the current is 15 km/hr and the speed of the current is 2.5 km/hr. The man's speed against the current is? (in km/hr)

- A. 8.5 B. 9 C. 10 D. 12.5
E. None of these

16. If a man rows at the rate of 5 kmph in still water and his rate against the current is 3.5 kmph, then the man's rate along the current is? (in kmph)

- A. 4.25 B. 6 C. 8.5 D. 6.5
E. None of these

17. A man can row at 5 kmph in still water and if the velocity of current is 1 kmph. It takes him 1 hour to row to a place and come back, how far is the place?

- A. 2.4 km B. 2.5 km C. 3 km D. 3.6 km
E. None of these

18. The speed of a boat in still water is 15 km/hr and rate of stream is 3 km/hr. The distance travelled downstream in 12 minutes is?

- A. 1.2 km B. 1.8 km C. 2.4 km D. 3.6 km
E. None of these

19. A motor boat, whose speed is 15 km/hr in still water goes 30 km down stream and comes back in a total of 4 hours 30 minutes. The speed of stream (in km/hr) is?

- A. 4 B. 5 C. 6 D. 10
E. None of these

20. A boat covers a certain distance down stream in one hour, while it comes back in 1 1/2 hours. If the speed of stream be 3 kmph, what is the speed of the boat in still water? (in kmph)

- A. 12 B. 13 C. 14 D. 15
E. None of these

Key Sheet

- | | | | |
|------|-------|-------|-------|
| 1. C | 6. A | 11. C | 16. D |
| 2. D | 7. B | 12. C | 17. A |
| 3. C | 8. A | 13. A | 18. D |
| 4. D | 9. A | 14. D | 19. B |
| 5. A | 10. B | 15. E | 20. D |

Answers:-

- (1) C
(2) D
(3) C
(4) D
(5) A

- (6) A
(7) B
(8) A
(9) A
(10) B

- (11) C
(12) C
(13) A
(14) D
(15) C

- (16) D
(17) A
(18) D
(19) B
(20) D

Explanation:-

① $D = 435 \text{ m}$, $S = 58 \text{ kmph}$
 $= 58 \times \frac{5}{18} \text{ mps}$

$$\therefore T = \frac{D}{S}$$
$$= \frac{435}{58 \times \frac{5}{18}} = \frac{435 \times 18}{58 \times 5} = 27 \text{ Sec. (D)}$$

② Average speed = $\frac{xy}{x+y} = \frac{2 \times 80 \times 120}{50 + 120} = 96 \text{ kmph (D)}$

③ Let, length of second train = x meters.

$$D = 145 + x, \quad T = 27 \text{ Sec}$$

$$S = 69 - 35 = 34 \text{ kmph (Same direction)}$$
$$= 34 \times \frac{5}{18} \text{ mps}$$

$$D = T \times S$$

$$145 + x = 34 \times \frac{5}{18} \times 27$$

$$x = 255 - 145 = 110 \text{ m. (C)}$$

④ $D_1 = 200$, $T_1 = 8 \text{ h}$, $D_2 = 300$, $T_2 = \frac{300}{60} = 5$

$$\therefore \text{Average Speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{200 + 300}{8 + 5} = 40 \text{ kmph (D)}$$

⑤ Let, length of the bridge = x meters.

$$S = 90 \text{ kmph} = 90 \times \frac{5}{18} = 25 \text{ mps}$$

$$\therefore D = T \times S \Rightarrow (290 + x) = 25 \times 27$$

$$290 + x = 675$$

$$x = 385 \text{ m (A)}$$

⑥ Time taken to cross = 8 am to 8 pm
= 8 hours.

In opposite direction, Relative Speed = $65 + 30$
= 145 kmph

$$\begin{aligned}\therefore D &= T \times S \\ &= 145 \times 8 \\ D &= 1160 \text{ km. (A)}\end{aligned}$$

⑦ Let, length of the train = x meters.

$$\begin{aligned}\frac{800+x}{100} &= \frac{400+x}{60} \\ \therefore x &= 200 \text{ m (B)}\end{aligned}$$

⑧ Required distance = $\frac{\text{Product of Speeds}}{\text{Difference of Speeds}} \times \text{Difference in Time}$

$$\begin{aligned}&= \frac{80 \times 60}{80 - 60} \times \frac{3 - (-5)}{60} \\ &= \frac{80 \times 60}{20} \times \frac{8}{60} = 32 \text{ km (A)}\end{aligned}$$

⑨ $D = 360 + 175 = 525 \text{ m}$

$S = 108 - 36 = 72 \text{ kmph (Same direction)}$

$$= 72 \times \frac{5}{18} = 20 \text{ mps}$$

$$T = \frac{525 \text{ m}}{20 \text{ mps}} = 26.25 \text{ Sec (A)}$$

⑩ Let, length of train = x m
length of platform = $2x$ m

$$x + 2x = \left(54 \times \frac{5}{18}\right) \times 32$$

$$3x = 15 \times 32$$

$$x = \frac{480}{3} = 160 \text{ m}$$

$$\begin{aligned}\therefore \text{Platform length} &= 2 \times 160 \\ &= 320 \text{ m (B)}\end{aligned}$$

Ans:- Speed in still water = $\frac{1}{2}(a+b)$ km/hr
 $= \frac{1}{2}(11+5) = 8$ kmph (C)

(12) Ans:- Downstream Speed = $\frac{16}{2}$
 $= 8$ kmph

upstream Speed = $\frac{16}{4}$
 $= 4$ kmph.

\therefore Speed in still water = $\frac{1}{2}(8+4) = 6$ kmph (C)

(13) Ans:- Speed of stream = $\frac{1}{2}(a-b)$ kmph
 $= \frac{1}{2}(13-8) = 2.5$ kmph (A)

(14) Ans:- Let, man's upstream speed = x kmph
 his downstream speed = $2x$ kmph

\therefore (Speed in still water) : (Speed of stream) = $\left(\frac{a+b}{2}\right) : \left(\frac{a-b}{2}\right)$
 $= \left(\frac{2x+x}{2}\right) : \left(\frac{2x-x}{2}\right)$
 $= \frac{3x}{2} : \frac{x}{2}$
 $= 3:1$ (D).

(15) Ans:- man's speed in still water = $(15 - 2.5) = 12.5$ km/hr.
 man's speed against current = $12.5 - 2.5 = 10$ km/hr (C)

(16) Ans:- Let, rate of current along stream = x kmph.
 $\therefore \frac{1}{2}(x+3.5) = 5$
 $\therefore x = 10 - 3.5 = 6.5$ kmph.

(17) Ans:- Downstream Speed = $(5+1) = 6$ kmph.
 upstream Speed = $(5-1) = 4$ kmph.
 Let, required distance be x km.

$\frac{x}{6} + \frac{x}{4} = 4 \Rightarrow 2x + 3x = 12 \Rightarrow x = 2.4$ km (A)

18) Ans:- Downstream Speed = $15+3 = 18$ kmph.

$$\begin{aligned}\therefore \text{Total time taken} &= \left(18 \times \frac{12}{60}\right) \\ &= 3.6 \text{ km. (D)}\end{aligned}$$

19) Ans:- Let, Speed of Stream = x km/hr.

Downstream Speed = $(15+x)$ km/hr.

Upstream Speed = $(15-x)$ km/hr.

$$\therefore \frac{30}{(15+x)} + \frac{30}{(15-x)} = 4\frac{1}{2}$$

$$\frac{900}{225-x^2} = \frac{9}{2} \Rightarrow 9x^2 = 225$$
$$\therefore x = 5 \text{ km/hr. (B)}$$

20) Ans:- Let, speed of boat in still water = x kmph.

\therefore upstream Speed = $(x-3)$

Downstream Speed = $(x+3)$

$$(x+3) \times 1 = (x-3) \times 1\frac{1}{2}$$

$$\therefore x+3 = (x-3) \times \frac{3}{2}$$

$$2x+6 = 3x-9$$

$$\therefore x = 15 \text{ kmph (D)}$$