

APURV'S WITH MANIK
PRACTICE TEST SERIES

QUANTS-BOATS & STREAMS

SOLUTIONS

1. The speed of a boat in still water is 18 km/h and the speed of the stream is 3 km/h. How much time (in hours) will it take to cover a distance of 105 km in downstream and coming back?

SSC CGL 10/09/2024 Tier 1 (Shift 3)

+

B. 10

C. 15

D. 9

$$D = ST$$

$$b = 18$$

$$S = 3$$

$$T = D/S$$

$$T = \frac{105}{b+S}$$

$$= \frac{105}{18+3}$$

$$= \frac{105}{21}$$

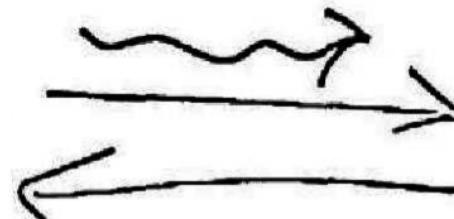
$$= 5$$

$$+ \frac{105}{b-S}$$

$$+ \frac{105}{18-3}$$

$$+ \frac{105}{15}$$

$$= 7$$



2. A boat can go 54 km upstream in 6 hours. If the speed of the stream is 4.8 km/h, then how much time (in hours) will the boat take to cover a distance of 279 km downstream? ssc cgl 11/09/2024 tier I (shift 3)

A. 20

B. 15

C. 18

P. 16

$$\begin{aligned} b - s &= 9 \\ s &= 4.8 \\ b &= 13.8 \end{aligned}$$

$$\begin{aligned}
 T &= D/S \\
 &= 279 \\
 &= \frac{93}{3} b + s \\
 &= \frac{279 \textcircled{18} : 3}{\cancel{18} \textcircled{6} \textcircled{5} : 3} = \frac{9 \textcircled{15}}{6 \textcircled{2}} \\
 &\quad \textcircled{15} \quad \textcircled{15} \\
 &\quad \textcircled{4} \quad \textcircled{15} \\
 &\quad \cancel{9} \cancel{5} \cancel{1} \\
 &\quad \cancel{6} \cancel{2} \\
 &\quad \underline{\underline{35}}
 \end{aligned}$$

3. A boatman goes 2 km against the current of the stream in 1 hour and goes 1 km along with the current in 10 minutes. How long will it take to go 6 km in stationary water? ssc cgl 12/09/2024 Tier I (Shift 3)

$$T = D/S$$
$$= 6/2$$
$$= \frac{6}{2}$$

$$T = 1.5 \text{ hrs}$$

A. 1 hr 30 mins

B. 1 hr 15 mins

C. 2 hr 30 mins

D. 1 hr 45 mins

$\rightarrow (DS/VS/B)$

$VS \rightarrow$

$\left\{ \begin{array}{l} ④ \\ ② \end{array} \right.$

$$b - s = 2 \text{ kmph}$$

$$b + s = 6 \text{ kmph}$$

$$\cancel{b = 8}$$

$$\left\{ \begin{array}{l} b = 4 \\ s = 2 \end{array} \right.$$

$$\left\{ \begin{array}{l} 10 \text{ min} \rightarrow 1 \text{ km} \\ \times 6 \\ 60 \text{ min} \rightarrow 6 \text{ km} \end{array} \right.$$

④ A boat can travel 78 km upstream and back in a total of 32 hours. It can travel 15 km upstream and 52 km downstream in a total of 9 hours. How much distance will the boat cover in 12 hours in still water? 11CCCL11/07/2024 Tariq Khan

A. 92 km

B. 96 km

~~T = D/S~~

C. 104 km

D. 100 km

12 × 8

$$b-s = 3$$

$$b+s = 13$$

$$2b = 16$$

$$b = 8$$

$$32 = \frac{78}{b-s(8)} + \frac{78}{b+s(13)}$$

✓ ⑨

$$9 = \frac{15}{b-s} + \frac{52}{b+s}$$

$$\frac{13}{x} = 4$$

$$x =$$

$$9 = \frac{15}{3} + \frac{52}{13}$$

- ~~✓~~
5. A boatman rows to a place 30 km distance and back in 14 hours. He finds that he can row 10 km with the stream at the same time as 4 km against the stream. Find the speed (in km/h) of the stream.

SSC CGL 13/09/2024 Tier I (Shift 3)

$$5d = \frac{2}{3}$$

$$d = \frac{2}{15}$$

A. $\frac{9}{2}$

B. $\frac{9}{4}$

C. $\frac{2}{9}$

D. $\frac{4}{9}$

$$\frac{30}{b+s} + \frac{30}{b-s} = 14$$

$$\frac{15}{30d} + \frac{15}{30u} = 14$$

$$5d = 2u$$

$$6u + 15u = 2 \frac{105}{b+s} = \frac{42}{b-s}$$

$$21u = 2$$

$$u = \frac{1}{21}$$

$$u = \frac{1}{3}$$

$$d = \frac{1}{b+s}$$

$$u = \frac{1}{b-s}$$

$$\frac{1}{b+s} = \frac{2}{15}$$

$$(b+s = 15)$$

$$(b-s = 3)$$

$$2s = 4.5$$

$$s = 4.5$$

$$s = 4.5$$

6. A motorboat takes 18 hours to go downstream, and it takes 36 hours to return the same distance. Find the ratio of the speed of the boat in still water to the speed of the stream. ssc CGL 17/02/2024 Tier 1 (Shift 2)

A. 3:1

B. 2:3

C. 2:1

D. 3:2

$$D \underset{\approx}{\sim} D$$

$$S_1 T_1 = S_2 T_2$$

$$(b+s) \cancel{18}_1 = (b-s) \cancel{36}_2$$

$$\frac{b+s}{s} = \frac{2b-2s}{s}$$
$$\frac{b}{s} + 1 = 2 - 2 \frac{s}{s}$$
$$\frac{b}{s} = 1$$
$$b = s$$

7. A motorboat travelling at a certain speed can cover a distance of 24 km upstream and 40 km downstream in 17 hours. At the same speed it can travel 32 km downstream and 12 km upstream in 10 hours. What is the speed of the current? ssc cgl 18/09/2024 Tier I (Shift 1)

A. 5 km/h

S

B. 4 km/h

T = 17

5

C. 2 km/h

12

D. 3 km/h

$$\cancel{17} = \frac{24}{b-s} + \frac{40}{b+s}$$

$$b+s = 8 \quad b-s = 5 \quad 17 = \frac{24}{b-s} + \frac{32}{b+s}$$

$$2s = 3 \quad b-s = 5 \quad 17 = \frac{24}{5} + \frac{32}{8}$$

$$3 + 3 = 6 \quad b+s = 8$$

8. A man can row a distance of 6 km in 1 hour in still water. He can row the same distance in 45 minutes with the current. Find the total time taken by him to row a distance of 16 km with the current and to return to the starting point. ssc cgl 18/09/2024 Tier I (Shift 1)

A. 4 hrs 40 mins

B. 6 hrs

C. 4 hrs

D. 6 hrs 40 mins

$$b = 6 \text{ kmph}$$
$$\frac{b+s}{2} = \frac{6 \text{ km}}{45/60 \text{ hr}} = 8 \text{ kmph}$$
$$s = ?$$

$$T = \frac{D}{S} = \frac{16}{8} + \frac{16}{4} = 2 + 4 = 6$$

9. A motorboat, whose speed in 15 km/h in still water, goes 50 km downstream and comes back in a total of 7 hours 30 minutes. The speed of the stream (in km/h) is? ssc CGL 23/09/2024 Tier I (Shift 2)

- A. 9 km/h S
B. 5 km/h
C. 11 km/h
D. 7 km/h

1, 2

$$b = 15$$

$$\begin{array}{rcl} b+s & = & 20 \\ b-s & = & 10 \\ \hline 2s & = & 10 \end{array}$$

~~$b+s = 20$~~ ~~$b-s = 10$~~ ~~$= 7.5 \times 2$~~
 ~~b~~ ~~b~~ ~~b~~
 ~~\oplus~~ ~~$-$~~ ~~\cancel{b}~~
 $\cancel{b+s}$ $\cancel{b-s}$ $\cancel{= 7.5 \times 2}$
 \cancel{b} \cancel{b} \cancel{b}
 $\cancel{\oplus}$ $\cancel{-}$ $\cancel{\cancel{b}}$
 \cancel{b} \cancel{b} \cancel{b}
 $\cancel{\cancel{b}}$ $\cancel{\cancel{b}}$ $\cancel{\cancel{b}}$
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$\overset{20}{\cancel{b}} + \overset{20}{\cancel{b}} = 10$ 15 3

10. A boat covers a distance of 55 km downstream in 5 hours, while it takes 11 hours to cover the same distance upstream. What is the speed of the boat? ssc cgl 23/09/2024 Tier I (shift 3)

- A. 8 km/h
- B. 9 km/h
- C. 11 km/h
- D. 7 km/h

$$b+s=11$$

$$b-s=5$$

$$2b=16$$

11. A boatman rows 2 km in 10 mins, along the stream and 12 km in 2 hours against the stream. What is the speed of the stream?

SSC CPO 28/02/2024 Tier I (Shift 1)

A. 3 km/h

B. 2.5 km/h

C. 4 km/h

D. 3.5 km/h

$$b+s = 12$$

$$b-s = 6$$

$$2s = 6$$

$$s = 3$$

12. A boat covers 24 km upstream and 36 km downstream in 10 hours, and 36 km upstream and 24 km downstream in 12 hours. The speed of the current is: SSC CPO 28/07/2024 Tier 1 (Solved)

A. $26/9 \text{ km/h}$

B. $33/13 \text{ km/h}$

C. $25/8 \text{ km/h}$

D. $24/7 \text{ km/h}$

$$\begin{aligned} 2S &= 10 - 15 \\ 8S &= 40 - 15 \\ S &= 25/8 \end{aligned}$$

$$\begin{aligned} 12u + 8d &= 4 \\ 12u + 18d &= 5 \end{aligned}$$

$$\begin{aligned} \times 4: 3u + 2d &= 1 \\ 3u &= 1 - 2d \end{aligned}$$

$$\begin{aligned} 3u &= 1 - 2d \\ &= 1 - 1/5 \\ 3u &= 4/5 \\ u &= 4/15 \end{aligned}$$

$$\frac{5}{10} = \frac{24}{b-s} + \frac{18}{b+s}$$

$$\begin{aligned} b+s &= 10 \\ b-s &= 15 \end{aligned}$$

13. A boat can travel 16.9 km downstream in 52 min. If the speed of the current is 3 km/h, then how much time (in hours) will the boat take to travel 84 km upstream? ssc cpo 29/06/2024 Tier I (Shift 3)

A. 6

B. 13.5

C. 6.22

D. 7.5

$$\frac{13 \times 15}{196 - 1} = 195$$

$$T = \frac{84 \times 2}{13.5 \times 2}$$

$$= \frac{168}{27} \text{ hr}$$

$$= 6.22$$

$$b + s = \frac{16.9}{\cancel{52/60}} = \frac{1.3}{\cancel{52}} \times \frac{15}{\cancel{60}} = 19.5$$

$$s = 3$$

$$b = 16.5$$

$$2s = \frac{7}{3} - \frac{7}{4}$$

$$b-s = \frac{7}{4}$$

$$24s = 28 - 21$$

$$= 7$$

$$s = \frac{7}{24}$$

$$u = \frac{4}{7}$$

$$4(1-u) = 3u$$

$$4 - 4u = 3u$$

$$4 = 7u$$

$$T = D/S$$

$$\frac{4}{b+s} = \frac{3}{b-s}$$

$$4d = 3u$$

$$d = \frac{3}{4}u$$

~~$\frac{3}{4}u$~~

14. A man rows 48 km and back in 48 hours. He can row 4 km with the stream in the same time as 3 km against the stream. The speed of the stream (in km/h) is: 11/20 21/24 3/24 7/24

A. $5/21$

B. $7/21$

C. $7/24$

D. $3/29$

$$48 = \frac{48}{b+s} + \frac{48}{b-s}$$

$$I = d+u$$

15. The speed of a boat when travelling downstream is 33 km/h, whereas when travelling upstream it is 27 km/h. What is the speed of the boat in still water? ssc cfo 29/06/2024 tier I (Shift 2)

A. 6 km/h

B. 60 km/h

C. 12 km/h

D. 30 km/h

$$b+s = 33$$

$$b-s = 27$$

$$2b = 60$$

16. The ratio of the speed of a boat to that of the current water is $35 : 8$. The boat goes along with the current in 5 hours 10 minutes. What will be the time taken by the boat to come back? ssc cpo 28/09/2024 Tier 1 (Shift 3)

- A. 5 hours 15 minutes 58 seconds B. 6 hours 45 minutes 10 seconds C. 8 hours 13 minutes 48 seconds

$$T = \frac{D}{S}$$

$$\frac{b}{s} = \frac{35x}{8x}$$

$$\frac{D}{43x} = 5 + \frac{10}{60}$$

$$\frac{D}{27x} = ?$$

$$\frac{27}{43} = \frac{31}{6y}$$

$$y = \frac{31 \times 43}{3 \times 27 \times 6}$$