

**EXERCISE 15A**

For SSC GD &amp; MTS Exams

1. A boat goes a distance of 4 km upstream in 2 hours and the same distance downstream in 20 minutes. How long will it take to go  $10\frac{1}{2}$  km in still water?  
SSC MTS 22/08/2019 (Shift-3)
- (a)  $1\frac{1}{2}$  hours                      (b) 48 minutes  
(c)  $1\frac{1}{4}$  hours                      (d) 1 hour
2. The speed of a boat in still water is 15 km/h. The speed of the current is 3 km/h. In how much time (in hours) will the boat travel a distance of 54 km upstream and the same distance downstream?  
SSC MTS 22/08/2019 (Shift-2)
- (a)  $7\frac{1}{2}$                                       (b) 7  
(c) 6                                        (d)  $6\frac{1}{2}$
3. A boat takes 45 minutes to go 3 km upstream and  $4\frac{1}{2}$  km downstream while it covers a distance of 3.6 km upstream and 2.4 km downstream in 39 minutes. The speed (km/h) of this boat in downstream is:  
SSC MTS 20/08/2019 (Shift-1)
- (a) 12                                      (b) 16  
(c) 9                                        (d) 10
4. A boat can go 10 km upstream and 20 km downstream in 7 hours. It can go 20 km upstream and 10 km downstream in 11 hours. What is the speed of this boat in still water?  
SSC MTS 19/08/2019 (Shift-2)
- (a) 2 km/h                                (b) 8 km/h  
(c) 6 km/h                                (d) 4 km/h
5. A boat goes at 20 km/h up stream and at 30 km/h down the stream. What is the speed of this boat in still water?  
SSC MTS 16/08/2019 (Shift-3)
- (a) 26 km/h                              (b) 24 km/h  
(c) 25 km/h                              (d) 22.50 km/h
6. In one hour, a man rows his canoe against the stream at 11 km/h and along the stream at 23 km/h. What is the speed (in km/h) of stream?  
SSC MTS 14/08/2019 (Shift-3)
- (a) 6                                        (b) 5  
(c) 17                                      (d) 16
7. A boat takes 80 minutes to 12 km upstream and 60 minutes to row 15 km downstream. How long will it take to row a distance of 36 km in still water?  
SSC MTS 13/08/2019 (Shift-2)
- (a) 2 hours                                (b) 3 hours  
(c) 4 hours                                (d) 2.5 hours
8. If the speed of the stream is 20% of the speed of boat in still water and it covers 120 km upstream in 150 minutes, then what is the downstream speed of the boat?  
SSC MTS 9/08/2019 (Shift-2)
- (a) 75 km/hr                              (b) 72 km/hr  
(c) 80 km/hr                              (d) 64 km/hr
9. The speed of a boat in still water is 30 km/hr. If the boat covers 60 km downstream in 1 hour 30 minutes, then what is the time taken by the boat to cover 60 km upstream?  
SSC MTS 7/08/2019 (Shift-3)
- (a) 3 hours                                (b) 5 hours  
(c) 4 hours                                (d) 1 hour
10. A boat covers 64 km upstream in 8 hours and 120 km downstream in 12 hours. What is the speed (in m/s) of the boat in still water?  
SSC MTS 7/08/2019 (Shift-1)
- (a) 2.5                                      (b) 2  
(c) 3.5                                      (d) 3
11. The downstream speed of a boat is 14 km/h. The upstream speed of this boat is 10 km/h. In what time it can cover a distance of 72 km in still water?  
SSC MTS 6/08/2019 (Shift-1)
- (a) 8 hours                                (b) 6 hours  
(c) 4 hours                                (d) 12 hours

**SOLUTIONS**

1. (a) Let speed of boat =  $x$  km /h  
Speed of water =  $y$  km/ h
- Upstream speed =  $x - y = \frac{4}{2} = 2$                       ...*(i)*
- Downstream speed =  $x + y = \frac{4 \times 60}{20} = 12$                       ...*(ii)*
- From equation *(i)* + *(ii)*

$$x = 7, y = 5$$

Taking time to cover  $2\frac{1}{7}$  km distance

$$= \frac{27}{2 \times 1} = \frac{3}{2} = 1\frac{1}{2} \text{ hours.}$$

2. (b) **Trick:**

(Speed) Upstream of boat =  $15 - 3 = 12$  km/h

(Speed) Downstream of boat =  $15 + 3 = 18$  km/h

$$\text{Taken time} = \frac{54}{12} + \frac{54}{18} = \frac{162 + 108}{36}$$

$$= \frac{270}{36} = 7\frac{1}{2} \text{ hours.}$$

3. (a) Let speed of boat =  $x$  km/h

Speed of stream =  $y$  km/h

Speed of upstream =  $(x - y)$  km/h

Speed of downstream =  $(x + y)$  km/h

$$\Rightarrow 3/(x - y) + 4.5/(x + y) = \frac{45}{60} \quad \dots(i)$$

$$\Rightarrow 3.6/(x - y) + 2.4/(x + y) = \frac{39}{60} \quad \dots(ii)$$

Multiply by 1.2 in equation (i) and equation (i) - (ii)

$$\Rightarrow 3/(x + y) = 1/4 \text{ km/h}$$

$$\Rightarrow x + y = 12 \text{ km/h}$$

$\therefore$  Downstream speed = 12 km/h

4. (c) Let Speed of boat =  $D$  (Downstream)

Speed of boat =  $U$  (Upstream)

According to question,

$$\Rightarrow \frac{10}{U} + \frac{20}{D} = 7 \quad \dots(i)$$

$$\Rightarrow \frac{20}{U} + \frac{10}{D} = 11 \quad \dots(ii)$$

Make factor of 10 and 20 and choose the common value

$$10 = 2, 5, 10$$

$$20 = 2, 4, 5, 10$$

Put the value in equation (i)

$$\frac{10}{U} + \frac{20}{2} = 7$$

$$U = 2$$

$$\frac{10}{D} + \frac{20}{2} = 11$$

$$D = 10$$

$$\begin{aligned} \therefore \text{Speed of boat in still water} &= \frac{10 + 2}{2} = \frac{12}{2} \\ &= 6 \text{ km/h} \end{aligned}$$

5. (c) **Trick**

Speed of Boat in water

$$= \frac{\text{Up stream} + \text{down stream}}{2}$$

$$= \frac{30 + 20}{2} = \frac{50}{2} = 25 \text{ km/h}$$

6. (a) Let speed of canoe =  $B$

and speed of current =  $C$

ATQ, down stream  $B + C = 23 \dots(i)$

Up stream  $B - C = 11 \dots(ii)$

equation (i) + (ii)

$$B = 17, C = 6$$

$\therefore$  Speed of current = 6 km/hr

7. (b) According to question,

$$\text{Speed of boat in upstream} = \frac{12}{80} \times 60 = 9 \text{ km/h}$$

Speed of boat in downstream

$$= \frac{15}{60} \times 60 = 15 \text{ km/h}$$

Speed of boat in water

$$= \frac{\text{Up stream speed} + \text{down stream sp}}{2}$$

$$= \frac{9 + 15}{2} = \frac{24}{2} = 12 \text{ km/h}$$

$$\therefore \text{Time taken} = \frac{36}{12} = 3 \text{ hr}$$

8. (b) **Trick:**

$$\therefore \frac{20}{100} \text{ Upstream} = \frac{4}{5}$$

$$\text{and downstream} = \frac{6}{5}$$

$$\text{ATQ, } \therefore \frac{4}{5} \text{ unit} = 120 \times \frac{60}{150}$$

$$\therefore 1 \text{ unit} = 120 \times \frac{60}{150} \times \frac{5}{4} = 60$$

$$\text{Speed of downstream} = 60 \times \frac{6}{5} = 72 \text{ km/h}$$

9. (a) Let speed of stream =  $S$  km/h

So, speed of downstream =  $(30 + S)$  km/h

and speed of upstream =  $(30 - S)$  km/h

ATQ,

$$(30 + S) \times \frac{90}{60} = 60$$

$$\Rightarrow 30 + S = 40$$

$$S = 40 - 30 = 10 \text{ km/h}$$

