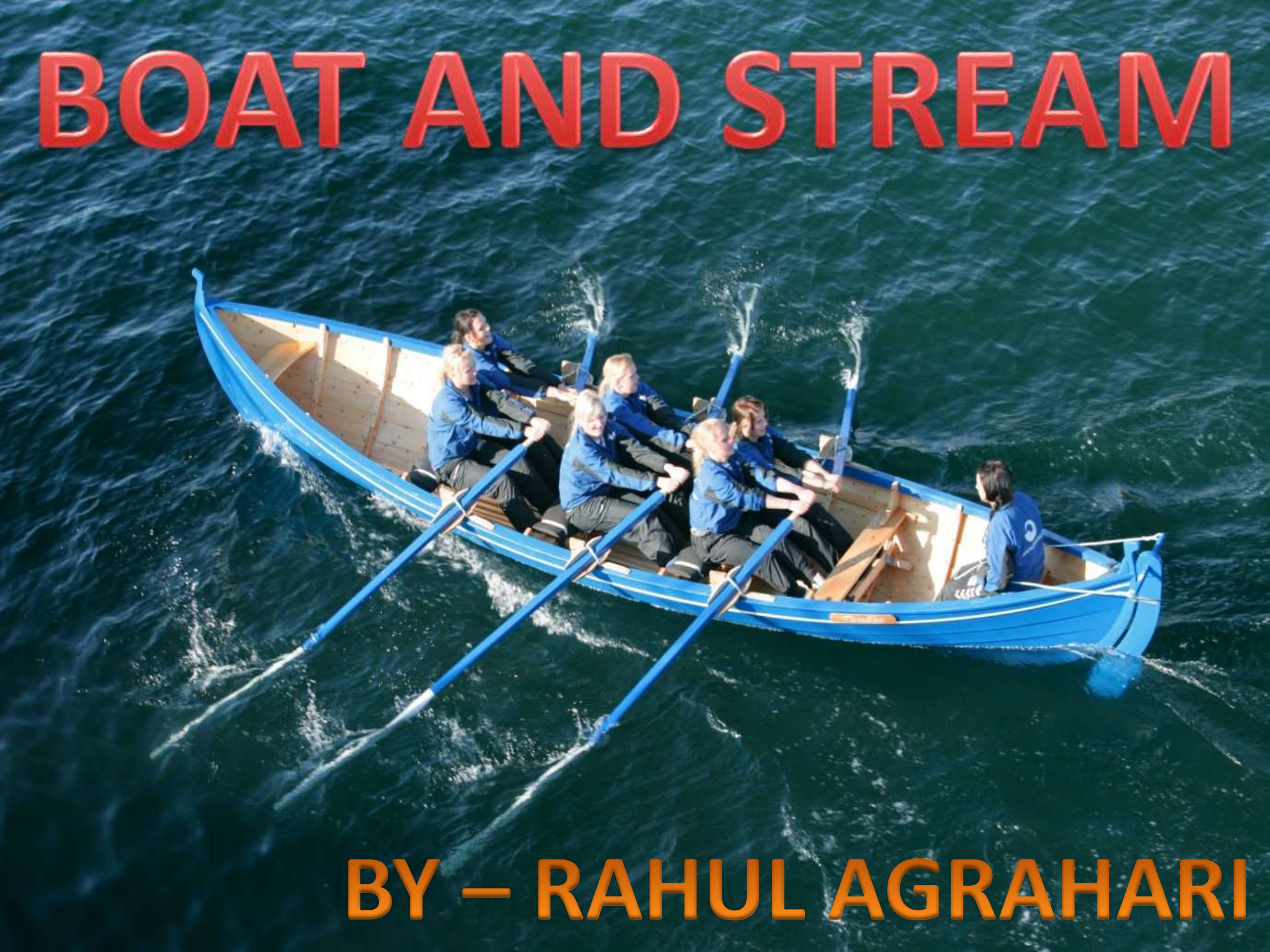
BOAT AND STREAM



BY – RAHUL AGRAHARI

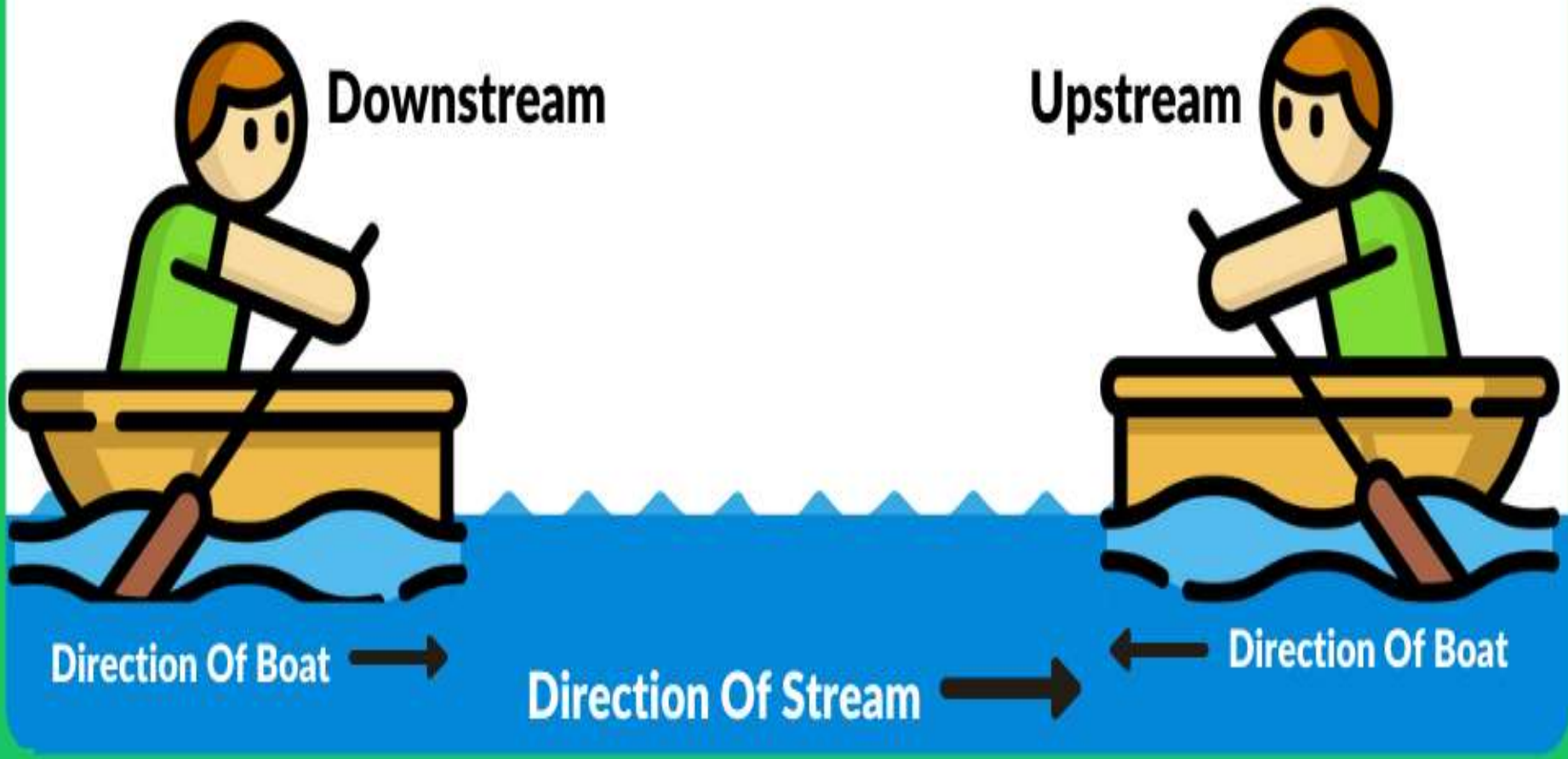
Boat And Stream

Speed =

Speed Of Stream + Speed Of Boat

Speed =

Speed Of Stream - Speed Of Boat



CONCEPT

Upstream Speed = (b – c)

Downstream Speed = (b + c)

QUESTION

The speed of the boat in still water is 10 km/hr. If its down stream speed 13km/hr. What is the speed of current?

EXPLANATION

b = 10 km/hr

Down stream speed = (b + c) = 13 km/hr

10 + c = 13

c = 3 km/hr

UPSC

Q. A boat goes 12 km upstream in 48 min. If the speed of stream 2 km/hr. What is the speed of boat in still water?

EXPLANATION

48 min = 12 km

60 min = 12/48 X 60 = 15 km

That means upstream speed = 15 km/hr

c = 2 km/hr

b – c = 15

b = 17 km/hr

INFOSYS

Q. A man swim 60 km downstream and 36 km upstream taking 6 hr each time.

1-What is the speed of man in still water?

2-What is the speed of current?

EXPLANATION

T = D/S

6 = 60/b+c **6 = 36/b-c**

b + c = 10 **b – c = 6**

b = 6 km/hr

c = 2 km/hr

UPSC

Q. A boat goes a certain distance down stream in 4 hr while if cover the same distance upstream in 5 hr. if the speed of stream is 2 km/hr .

1-What is the speed of boat in still water?

2-How far is the place?

3-What is the total distance travel by the boat?

EXPLANATION

T = D/S

4 = D/b+c **5 = D/b-c**

c = 2 km/hr

4 = D/b+2 **5 = D/b-2**

(i) b = 18 km/hr

(ii) D = 4 X (18 + 2) = 80 km

(iii) 2D = 2 X 80 = 160 km

GATE

Q. A man can row at 8 km per hour in still water, if it takes him thrice as long to row upstream, as to row downstream, then find the stream velocity in km per hour?

EXPLANATION

T = D/S

b = 8 km/hr

T = D/b+c ------[i] **3T = D/b-c ------[ii]**

Taking ratio of equation 1 and 2

1/3 = (b – c)/(b + c) **put b = 8**

c = 4 km/hr

CAT

Q. A boat goes two km against the current in 1hr and 1 km along the current in 10 min. How long will take to go 5 km in still water?

EXPLANATION

T = D/S

1 = 2/(b – c) -------[i]

10/60 = 1/(b + c) ----------[ii]

b = 4 km/hr

Time take to go 5 km in still water:-

T = 5/4 = 1.25 hr = 75 min

UPSC

Q. A boat can move at 10 km/hr in still water if the stream is flowing 2 km/hr and if takes 5 hr in all to row a place and back. What is the total distance travel by boat?

EXPLANATION

$T = D/S$

$b = 10$ km/hr $\qquad\qquad$ $c = 2$ km/hr

$T_1 = D/(b + c)$ $\qquad\qquad$ $T_2 = D/(b - c)$

$T_1 + T_2 = D\,[1/12 + 1/8] = 5$

$D = 24$ km

Total distance travel by boat = $2D = 2 \times 24 = 48$ km

SAIL

Q. A boat with speed 20 m/s in still water take 1/3 hr and 1/2 hr in order to cover same distance downstream and upstream respectively. Then the speed of the current is:

(a) 6 m/s (b) 8 m/s

(c) 3 m/s (d) 4 m/s

EXPLANATION

T = D/S

b = 20 m/s

20 X 60 = D/(b + c)

30 X 60 = D/(b – c)

2/3 = (20 – c)/(20 + c)

c = 4 m/s

UPSC

Q. Current of the river is 3 km/hr and a sailor can row 7 km/hr in the still water. How much time will he take to go 20 km down the river and come back up the river at starting place ?

EXPLANATION

T = D/S

b = 7 km/hr

c = 3 km/hr

T = 20/10 + 20/4 = 6 hr

Thank you