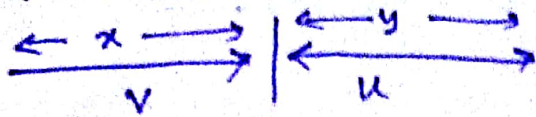


7. Relative Speed :

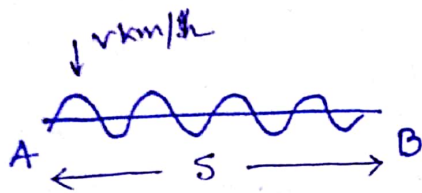


A train length x moving with a speed v .
 Second train of length y , move with a speed u in opposite direction.

\therefore Relative speed in opposite direction :

$$v + u = \frac{x + y}{t}$$

8.



$t_1 \rightarrow$ D.S.

$t_2 \rightarrow$ U.S.

A and B are two terminal of a river, the relative speed of the river is u km/h and speed of water is v km/h. The dist between A and B is S . The boat takes t_1 hour to cover a stream in down

stream and takes t_2 hour to cover a stream in upstream

$$\text{downstream: } v + u = \frac{S}{t_1} \quad \text{--- (1)}$$

$$\text{up stream: } v - u = \frac{S}{t_2} \quad \text{--- (2)}$$

$$\left. \begin{aligned} v &= \frac{S}{2} \left(\frac{1}{t_1} + \frac{1}{t_2} \right) \\ u &= \frac{S}{2} \left(\frac{1}{t_1} - \frac{1}{t_2} \right) \end{aligned} \right\} \text{(if } S \text{ is given)}$$

if S is not given,

$$\frac{v}{u} = \frac{t_2 + t_1}{t_2 - t_1}$$