① Ramesh 3 km in 30 min.

$$S = \frac{d}{t} = \frac{3}{0.5 \, hr}$$

$$\boxed{S = 6 \, Km/hr}$$

② Train travels 50 km/hr.

$$d = S \times t$$
$$= 50 \times 3$$
$$= 150 \, km.$$

③ Train travels at 50 km/hr. go in 3l

$$d = S \times t$$
$$= 50 \times 3$$
$$= 150 \, Km.$$

④ 20 km in 1 hr 30 min = 1.5 hr.

$$Speed = 20/1.5 \, hr.$$
$$S = 13.33 \, Km/hr.$$

⑤ A boat goes 10 km downstream in 1 hr.

$$Speed = 10 \, Km/hr.$$
$$S = 10 \, Km/hr$$

⑥ If a boat.

⑥ Upstream speed = Boat's speed in still water − stream speed.

So, 15 Km/hr − 5 km/hr = 10 km/hr

⑦ Upstream speed = Distance / Time

$$= 4 \, Km/2 \, hr$$
$$= 2 \, Km/hr.$$

⑧ Downstream speed = Distance/Time

$$= 24 \, km/2 \, hr$$
$$= 12 \, km/hr$$

⑨ Speed = Distance / Time.

$$= 300 \, km / 5 \, hr.$$
$$= 60 \, km/hr.$$

(10) Speed = Distance / Time
= 60km / 3hr.
= 20 Km/hr.

(11) Time = distance / speed.
= 240km / 60 km/hr
= 4 hrs

(12) Speed of boat = 12.5km/hr,

Upstream = 30 / 3 = 10km/hr

Downstream = 30/8
= 15 km/hr.

Boat speed = (15 + 10)/2
= 12 km/hr.

stream speed = (15 - 10)/2.
= 2.5 km/hr

(13) Upstream = 20 - 5 = 15km/hr.
= 15 km/hr.
Downstream = 20 + 5
= 25 km/hr.

(14) Speed = Distance ÷ Time.
= 120 ÷ 9
= 13.33 m/s.
Convert to km/hr = 13.33 × 18/5
= 48 km/hr.

(15) Relative speed = (120 + 140)/10
= 260/10
= 26 m/s.

(16) Upstream speed = 20/4 = 5 km/hr.
Downstream speed = 20/3.
= 6.67 km/hr
Boat speed = (5 + 6.67)/2
= 5.8 km/hr.

stream speed = (16.67) - 5)/2.
= 0.83 km/hr.

(17) Downstream speed = 5 + 2
= 7 km/hr.
Time = 10/7 = 1.43 hrs ≈
= 1 hr & 6 minutes

(18) Let Total distance = 60 + 60
= 120 km
1st part = 60/40
= 1.5 hr
2nd part = 60/60
= 1 hr

Total time = 2.5 hr.
Avg speed = Total dis ÷ Total time
= 120 ÷ 2.5
= 48 km/hr.

(19) Downstream speed = 48/3
= 16 km/hr.
Upstream's speed = 48/4
= 12 km/hr
Speed of boat = (16 + 12)/2
= 64 km/hr
Speed of stream = (16 - 12)/2
= 2 km/hr.

(20) Total distance = 100 + 200
= 300 m.
speed = 60 km/hr = (60 × 1000)/3600
= 1667 m/s
Time = 300/16.67 ≈ 18 sec

(21) Boat speed = x km/hr.
Then downstream = x + 2, upstream
= x - 2
Time = 30/(x + 2) + 20/(x - 2)
Time = 5

$$30(x-2) + 20(x-2) = 5(x^2-4)$$
$$30x - 60 + 20x - 40 = 5x^2 - 20$$
$$5x^2 - 50x = 0$$
$$x(x-10) = 10$$
$$x = 10$$
$$Speed = 10 Km/hr$$

(22) Relative speed $= 60 + 40$
$$= 100 Km/hr.$$
$$= 100 \times 1000 / 3600$$
$$= 27.28 \, m/s.$$

(23) Speed $= x \, Km/hr$
Upstream $= x - 2$
Downstream $= x + 2$
Time $= 2 \, hrs$

$$\frac{20}{x-2} - \frac{20}{x+2} = 2.$$
$$Xhy \, (x-2) \, (x+2)$$

$$20(x+2) - 20(x-2) = 2(x^2-4)$$
$$20x + 40 - 20x + 40 = 2x^2 - 8$$
$$80 = 2x^2 - 8$$
$$88 = x^2 = 44$$
$$x = \sqrt{44}$$
$$x = 6.65.$$

(24) $S = 72 \, Km/hr.$
$$= (72 \times 1000)/3600 = 20 \, m/s$$
Length $= 20 \times 12 = 240 m$
Total length $= (train + platform)$
$$= 20 \times 18$$
$$= 360 m.$$
Platform length $= 360 - 240$
$$= 120 m.$$

(25) Speed $= x \, Km/hr$
Upstream $= 20 - x$
Downstream $= 20 + x$
$$\frac{40}{20-x} - \frac{40}{20+x} = 1$$

$\times$ ly · by $(20-x)(20+x)$

$$40(20+x) - 40(20-x) = (20^2 - x^2)$$
$$800 + 40x - 800 + 40x = 400 - x^2$$
$$80x = 400 - x^2$$
$$= x^2 + 80x - 400$$
$$= \frac{1}{2}$$

solve queadratic

$$x = \frac{-80A \pm \sqrt{80^2 + 4 \times 400}}{2}$$

$$= \frac{-80A \pm \sqrt{8000}}{2} \quad \frac{-80A \pm 89.44}{2}$$

speed of stream $\approx$ 40.72 km/hr