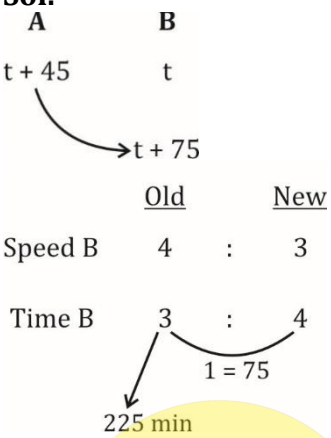
Reasoning Mega Quiz for RRB NTPC (Solutions)

S1. Ans.(c)
Sol. Let the speed of second train be x kmph
Relative speed = (30 + x) kmph
$= (30 + x) \times \frac{5}{18}$ m/sec
$= \frac{150 + 100}{10} = 25$ m/sec
$\Rightarrow 30 + x = \frac{25 \times 18}{5} = 90$
$\Rightarrow$ x = 60 kmps

S2. Ans.(c)
Sol.



A = 225 + 45 = 270
Speed of A = $\frac{450}{270} \times 60 = 100$ km/hr

S3. Ans.(b)
Sol. Length of bridge = 1000 m.
Length of train = 500 m.
Total distance covered in clearing the bridge = 1500 m.
Time taken = 120 seconds.
$\therefore$ Speed $= \left(\frac{1500}{120}\right)$ m/sec
$= \left(\frac{25}{2} \times \frac{18}{5}\right)$kmph = 45 kmph.

S4. Ans.(B)
Sol. Given
Distance = 900
Time = 25 hour
Speed = $\frac{900}{25}$
Convert speed in m/s = $\frac{900}{25} \times \frac{5}{18} = 10$ m/sec

S5. Ans.(b)

Sol. Let the required speed by x km/hr

Then, $\frac{2 \times 64 \times x}{64 + x} = 56$

$\therefore 128x = 64 \times 56 + 56x$

$\therefore x = \frac{64 \times 56}{72} = 49.77$ km/hr

S6. Ans.(b)

Sol. Let speed of train C=S_2

We know that

$$\text{Relative speed} = \frac{\text{Distance}}{\text{time}}$$

$$(S_1 - S_2) = \frac{400 \text{ meter}}{2 \text{ min}}$$

$$(100 - S_2) = \frac{400 \text{ meter} \times 60 \text{ hour}}{1000 \times 2 \text{ min}}$$

$100 - S_2 = 12$ km/hr.

$S_2 = 100 - 12$ km/hr = 88 km/hr

S7. Ans.(b)

Sol. Total distance covered $= 90 \times \frac{5}{18} \times 38 = 950$ m

So, length of bridge = 950 - 287 = 663

S8. Ans.(b)

Sol. Let no. of wagons = w

and speed of engine without wagon $= \frac{20}{3}$ m/sec $= 24$ km/hr

The speed of train $= S - K\sqrt{w}$

$20 = 24 - K\sqrt{w}$

$K = 2$

When train will stop it's speed become zero

$0 = 24 - 2\sqrt{w}$

$w = 144$

so, we can put (144 – 1) = 143 wagons just can move with its least possible speed.

S9. Ans.(a)

Sol. Time taken to covered 600 km $= \left(\frac{600}{100}\right)$ hrs = 6 hrs.

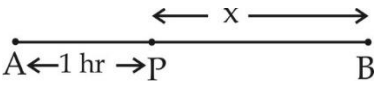
Number of stoppages $= \frac{600}{75} - 1 = 7$

Total time of stoppage = (3 × 7) min = 21 min

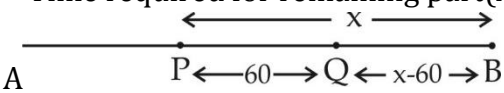
Hence, total time taken = 6 hrs 21 min

S10. Ans.(a)

Sol. Case I → If speed is decreased by $\frac{1}{6}$. So, the time will be increased by $\frac{1}{5}$, which is equal to 1 hour 12 min.



∴ Time required for remaining part(x) of the journey is = 5 × 72 min = 360 min = 6 hour



So, the normal time required for this remaining part (x - 60) of journey = 5 × 1 = 5 hour.

So, it is clear that when the train runs 60 km of its normal speed it takes 1 hour less, so we can calculate in 1 hour the train can run 60 km with its normal speed. Thus, normal speed of train is 60 km/h.

So, Train requires 6 hours at it's normal speed of 60 km/h for x km. then

$x = 6 \times 60 = 360$ km

Thus, the total distance = Distance travelled before accident + Distance travelled after accidents

= 60 × 1 + 60 × 6 = 420 km

S11. Ans.(c)

Sol.

A + B + C's 1 hour efficiency = $\frac{1}{6}$

A + B + C's 2 hour work = $\frac{2}{6} = \frac{1}{3}$

Remaining work = $1 - \frac{1}{3} = \frac{2}{3}$

$\frac{2}{3}$ work done by A + B = 7

1 work A + B = $\frac{21}{2}$

$A+B+C \Rightarrow \quad 6 \qquad 7$

$\qquad\qquad\quad 42$

$A+B \quad \Rightarrow \quad \frac{21}{2} \qquad 4$

Efficiency of C = 7 – 4 = 3

C alone will fill the tank in = $\frac{42}{3}$ = 14 hours

S12. Ans.(c)

Sol.

$A \quad \Rightarrow \quad 10 \qquad\quad 18$

$B \quad \Rightarrow \quad 15 \quad 180 \quad 12$

$A+B-C \Rightarrow \quad 18 \qquad\quad 10$

A + B – C = 10

18 + 12 – C = 10

–C = 10 – 30

C = 20

C will empty the cistern in

= $\frac{180}{20}$ = 9 hours

S13. Ans.(a)

Sol.

A ⇒ 20 15

B ⇒ 25 300 12

C ⇒ –30 –10

A + B + C ⇒ 15 + 12 – 10⇒ 17

3 hours work → 17

51 hours work → 289

Remaining work = 11

Now it's A's turn

Time taken by A = $\frac{11}{15}$

Total time = $51\frac{11}{15}$

S14. Ans.(c)

Sol. Efficiency of A = $\frac{1}{20}$

20% efficiency of A = $\frac{1}{20} \times \frac{20}{100} = \frac{1}{100}$

Efficiency → A : 20% Efficiency A = $\frac{1}{20} : \frac{1}{100} = 5 : 1$

Time Ratio → 1 : 5

1r → 20 minutes

5r → 100 minutes

1 pipe takes = 100 minutes

5 pipe will take = $\frac{100}{5}$ = 20 minutes

S15. Ans.(d)

Sol.

A ⇒ 40 3

B ⇒ 60 120 2

C ⇒ 30 4

3 minutes work = 3 + 3 + 3 + 2 + 4 = 15

24 minutes work = 15 × 8 = 120

S16. Ans.(a)

Sol.

A 8 3

24

B 12 2

Time = $\frac{24}{5} = 4\frac{4}{5}$ hours

With leak in the bottom the cistern will be full in

$= 6 + 4\frac{4}{5} = 10\frac{4}{5}$

$\frac{1}{8} + \frac{1}{12} + \frac{1}{x} = \frac{5}{54}$

$\frac{1}{x} = \frac{5}{54} - \frac{1}{8} - \frac{1}{12}$

$\frac{1}{x} = \frac{20 - 27 - 18}{216}$

$\frac{1}{x} = \frac{-25}{216}$

$x = \frac{216}{25}$

S17. Ans.(c)

Sol.

	A	:	B
Efficiency →	6	:	1
Time →	1	:	6

$6r \rightarrow 28$

$1r \rightarrow \frac{14}{3}$

Total time $= \frac{1}{28} + \frac{3}{14}$

$= \frac{1+6}{28} = \frac{7}{28} = 4$ minutes

S18. Ans.(d)

Sol.

$\frac{1}{10} + \frac{1}{15} + \frac{1}{x} = \frac{1}{18}$

$\frac{1}{x} = \frac{1}{18} - \frac{1}{15} - \frac{1}{10}$

$= \frac{10 - 12 - 18}{180}$

$x = \frac{180}{20} = 9$ minutes

S19. Ans.(b)

Sol. A + Q

$\frac{1}{6} + \frac{1}{\text{Inlet}} = \frac{1}{8}$

$\frac{1}{\text{Inlet}} = \frac{1}{8} - \frac{1}{6}$

$\frac{1}{\text{Inlet}} = \frac{3 - 4}{24}$

Inlet ⇒ 24 hours

Capacity = 4 × 24 × 60 = 5760

S20. Ans.(b)
Sol. Let the filling capacity ⇒ x m^3
Emptying capacity ⇒ x + 10 m^3
$\frac{2400}{x} - \frac{2400}{x+10} = 8$
$\frac{x+10-x}{(x+10)\,x} = \frac{1}{300}$
3000 = x (x + 10)
Using option (b)
50 × 60 = 3000 satisfies

S21. Ans.(d)
Sol. Speed = $\left(\frac{110}{3}\right)$ m/sec
Time taken to cross railway platform
$= \left[(100 + 165) \times \frac{3}{110}\right]$ sec.
$= \left(275 \times \frac{3}{110}\right)$ sec = 7.5 sec

S22. Ans.(a)
Sol. Speed of train relative to man
= (25 + 5) m/sec = 30 m/sec.
∴ Time taken to pass the man
$= \left(\frac{150}{30}\right)$sec = 5 sec.

S23. Ans.(a)
Sol. Speed of the train relative to man = $\left(\frac{110}{6}\right)$m/sec
$= \left(\frac{110}{6} \times \frac{18}{5}\right)$kmph = 66 kmph
Let the speed of the train be x kmph
Then, relative speed = (x + 6) kmph.
x + 6 = 66 or x = 60 kmph.

S24. Ans.(a)
Sol. Let the speed of train C be x kmph
Speed of B relative to C = (120 - x)
$= \left[(120 - x) \times \frac{5}{18}\right]$ m/sec $= \left[\frac{600 - 5x}{18}\right]$ m/sec
Distance covered = (100 + 200) m = 300 m.
$\therefore \frac{300}{\left(\frac{600-5x}{18}\right)} = 120 \Rightarrow 5400$
$= 120(600 - 5x) \Rightarrow x = 111.$

S25. Ans.(d)
Sol. Relative speed = (36 + 45) km/hr
$= \left(81 \times \frac{5}{18}\right)$ m/sec $= \left(\frac{45}{2}\right)$ m/sec
Length of faster train $= \left(\frac{45}{2} \times 8\right)$m = 180 m.