

Mathematics Mega Quiz For RRB NTPC (Solutions)

S1. Ans.(c)

Sol. Speed ratio $\rightarrow 45 : 60 \Rightarrow 3 : 4$

Time ratio $\Rightarrow 4 : 3$ [$S \propto 1/\text{time}$ when distance is same]

(4 - 3) ratio $\rightarrow 11/2$ hours

1 ratio $\rightarrow 11/2$ hours

time taken by bus travelling at 45 km/hr = $4 \times 11/2 = 22$ hours

Distance = $45 \times 22 = 990$ km

S2. Ans.(b)

Sol. Let the speed of car be x km/hr

$$(x - 4) \times 3/60 = 130/1000$$

$$30x - 120 = 78$$

$$30x = 198$$

$$x = 6.6 \text{ km/hr}$$

S3. Ans.(c)

Sol. ATQ,

$$\text{Distance} = 80 \times 7 = 560 \text{ m}$$

S4. Ans.(c)

Sol. Distance = $60 \times 15 = 900$ km

$$\text{Speed} = 900/12 = 75 \text{ km/hr}$$

S5. Ans.(c)

Sol. Distance = $10 \times 42 = 420$

$$\text{Speed} = 420/7 = 60 \text{ km/hr}$$

$$\text{Increase in speed} = 60 - 42 = 18 \text{ km/hr}$$

S6. Ans.(a)

Sol. Train Car

$$240/210 = 8 \text{ h } 40 \text{ min.}$$

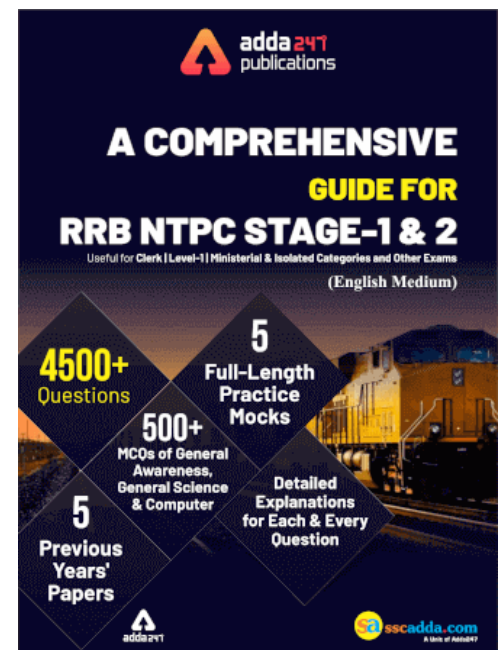
$$180/270 = 9 \text{ h}$$

To travel extra 60 km by car increase in time = 20 min

So, travel extra 240 km by car increase in time = 80 min

$$\therefore 450 \text{ km by car in} = 8 \text{ h } 40 \text{ min} + 80 \text{ min} = 10 \text{ h}$$

$$\text{Speed of car} = 450/10 = 45 \text{ km/h}$$



S7. Ans.(b)**Sol.** B → 100 km/hr

Distance = 150 + 250 = 400 m

$$2/60 = (400/1000)/(100-x)$$

$$1/3 = 4/(100-x)$$

$$100 - x = 12$$

$$x = 88 \text{ km/hr}$$

S8. Ans.(b)**Sol.** ATQ,

$$\text{Time} = 400/5 = 80 \text{ seconds}$$

S9. Ans.(a)**Sol.** Ratio of speed → 3 : 4

Ratio of time → 4 : 3

$$(4 - 3)r \rightarrow 10 \text{ minutes}$$

$$1r \rightarrow 10 \text{ minutes}$$

$$4 \text{ ratio} \rightarrow 40 \text{ minutes}$$

$$\text{Distance of the multiplex} = 3 \times 40/60 = 2 \text{ km}$$

S10. Ans.(d)

Sol. $x/12 + x/9 = 2(20/60)$

$$x/12 + x/9 = 7/3$$

$$(3x + 4x)/36 = 7/3$$

$$x = 12 \text{ km}$$

S11. Ans.(b)**Sol.** Distance = 15 km

Case I

$$1/2 = 15/(x+y)$$

$$x + y = 30 \dots(i)$$

Case II

$$5/2 = 15/(x-y)$$

$$x - y = 6 \dots(ii)$$

From (i) & (ii) we will get

$$x = 18 \text{ km/hr}$$

S12. Ans.(b)

Sol. Distance = $3 \frac{36}{60} \times 5 = 18/5 \times 5 = 18 \text{ km}$

Time taken = $18/24 \text{ hr} = 3/4 \text{ hr}$

$$= 3/4 \times 60 \text{ min} = 45 \text{ minutes}$$

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S13. Ans.(c)**Sol.** Let the original speed of Aeroplane be x km/hr

$$1200/((x-300)) - 1200/x = 2$$

$$(x - x + 300)/(x - 300)x = 2/1200$$

$$x(x - 300) = 600 \times 300$$

$$x = 600 \text{ km/hr}$$

$$\text{original timet} = 1200/600 = 2 \text{ hours}$$

S14. Ans.(b)**Sol.** Let A finisher the race of x kmDistance travelled by A = x Distance travelled by B = $x - 12$ Distance travelled by C = $x - 18$

in another race B & C

Distance travelled by B = x kmDistance travelled by C = $x - 8$ km

$$(x - 12)/(x - 18) = x/(x - 8)$$

$$x = 48$$

S15. Ans.(b)**Sol.** Let the side of the square playground is x .

$$\text{And, Area} = x^2 = 1127.6164$$

$$x = \sqrt{1127.6164}$$

$$x = 33.58$$

$$\text{Perimeter of playground} = 4x = 4 \times 33.58 = 134.32$$

$$\text{Time taken to complete 1 round} = 134.32/(2(9/20)) = 134.32/49 \times 20 = 54.82 \text{ min.}$$

S16. Ans.(a)**Sol.**

	Total work	Efficiency
A →	2h	3
B →	3h	2

$$A + B \text{ fills the tank in} \Rightarrow 6/5 \text{ hours} = 11/5 \text{ hours} = 1 \text{ hour } 12 \text{ minutes}$$

S17. Ans.(d)**Sol.** One drop per sec

$$\text{Drops in 1 minute} = 60$$

$$\text{Drops in 1 hour} = 3600$$

$$\text{Drops in 24 hours} = 3600 \times 24$$

$$\text{Drops in 300 days} = 3600 \times 24 \times 300$$

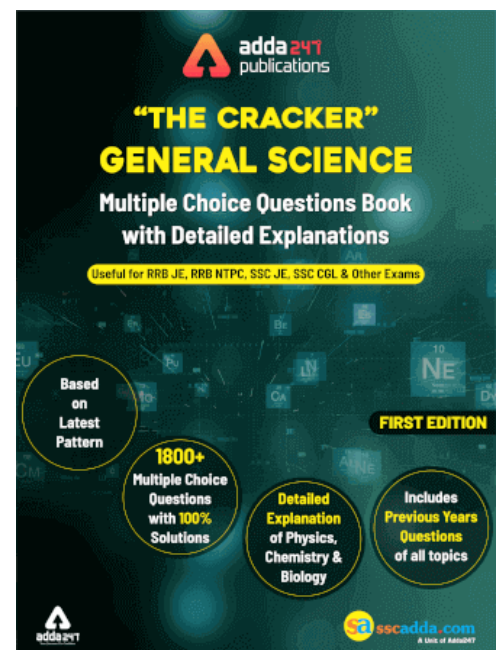
$$3600 \times 24 \times 300 \text{ Drops}$$

$$= (3600 \times 24 \times 300)/600 \times 100 \text{ mL}$$

$$= 4320000 \text{ mL}$$

$$1 \text{ mL} = 1/1000 \text{ L}$$

$$= 4320000/1000 \text{ L} = 4320 \text{ L}$$



S18. Ans.(b)

Sol. ATQ,

$$9 \times 20 = x \times 15$$

$$x = 12$$

S19. Ans.(c)

Sol.

	Total work	Efficiency
A →	20m	3
	60	
B →	-30m	-2

Work done by A & B in 2 minutes = $3 - 2 = 1$ work

57 work will be done in $\Rightarrow 2 \times 57 \Rightarrow 114$ minutes

Remaining work $\Rightarrow 60 - 57 = 3$

Next turn is of A will complete 3 work in 1 minute

\therefore Total time required to fill the cistern = $114 + 1$

= 115 minutes

S20. Ans.(b)

Sol.

	Total work	Efficiency
A →	30	6
B →	45	4
	180	
C →	-36	-5

Work done by A & B in 12 minutes = $(6 + 4) \times 12 = 120$

Remaining work = $180 - 120 = 60$

Efficiency of A + B + C = $6 + 4 - 5 = 5$

60 work will be done by A + B + C in = $60/5 = 12$ minutes

Total time in which tank will be full = $12 + 12 = 24$ minutes

S21. Ans.(d)

Sol.

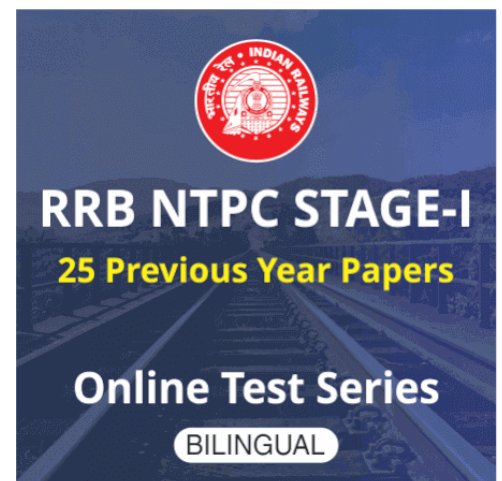
	Total work	Efficiency
A →	x	y
	xy	
B →	-y	-x

Total time required to finish xy work = $xy/(y - x)$

S22. Ans.(b)

Sol.

	Total work	Efficiency
A →	4	6
	24	
B →	6	4



Work done by (A + B) in 2 hours = $(6 + 4) = 10$

Work done by (A + B) in 4 hours = 20

Remaining work = 4

4 work will be done by A in

$\Rightarrow 4/6$ hours

$\Rightarrow 2/3$ hours

Total time = $4 + 2/3$ hours = $42/3$ hours

S23. Ans.(d)

Sol.

Total work Efficiency

A → 6 4

24

B → 8 3

Work done by (A + B) in 2 hours = $(4 + 3) \times 2 = 14$

Remaining work = $24 - 14 = 10$

Remaining work will be done by B is $\Rightarrow 10/3$ hours = $31/3$ hours

S24. Ans.(d)

Sol.

Work Efficiency

A → 4 4

16

B → -16 -1

Total time required to fill the tank = $16/(4-1) = 16/3 = 5\frac{1}{3}$ hours

S25. Ans.(c)

Sol. Efficiency of A = $1/24$

Let B is leakage

Efficiency of A + B = $1/36$

$1/24 + B = 1/36$

$B = 1/36 - 1/24 = (2-3)/72 = -1/72$

B will empty the tank in 72 hours

A → 24 3

72

B → 72 -1

Half work = $72/2 = 36$

Half full tank will be empty is = $36/1 = 36$ hours

S26. Ans.(c)

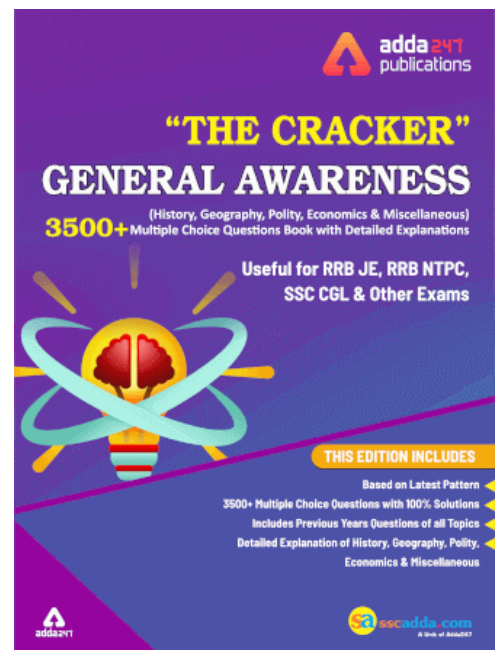
Sol.

Total work Efficiency

1st Inlet 3 5

2nd Inlet $\frac{15}{4}$ 15 4

3rd Outlet -1 -15



Work done by two inlet pipes upto 3 pm = $5 + 4 + 5 = 14$
 Efficiency of All the pipes = $5 + 4 - 15 = -6$
 In two hours work done by All the pipes = $-6 \times 2 = -12$
 Remaining work = $14 - 12 = 2$
 2 work will be done by all the pipe in = $2/6 = 1/3$ hours = 20 minutes
 Time at which the tank will be empty
 = 3:00 + 2h + 20 minutes = 5 : 20 pm

S27. Ans.(a)

Sol.

	Total work	Efficiency
A	12	10
B	8	15
C	-15	-8
	120	

Work done by (A + B + C) in 5 hours = $(10 + 15 - 8) \times 5 = 17 \times 5 = 85$
 Portion of tank that will be filled in 5 hours = $85/120 = 17/24$

S28. Ans.(d)

Sol.

	Total work	Efficiency
A	8	3
	24	
B	12	2

Work done by A in 2 hours = $3 \times 2 = 6$
 Remaining work = $24 - 6 = 18$
 18 work will be done by (A + B) in = $18/5 = 3 \frac{3}{5}$
 = 3 hours , $3/5 \times 60$ min = 3 hours 36 minutes
 The tank will be full = 9:00 am + 3 hours + 36 m = 12:36 pm

S29. Ans.(a)

Sol.

	Total work	Efficiency
1 st pipe	20	5
	100	
2 nd pipe	25	4

5 minutes work of 1st & 2nd pipe = $[5 + 4] \times 5 = 45$
 Remaining work = $100 - 45 = 55$
 Time taken by 1st pipe to fill the remaining portion = $55/5 = 11$ minutes

S30. Ans.(b)

Sol. 1st pipe → fills → p hours

2nd pipe → empties → q hours


Working together they will do the work with efficiency = $1/p - 1/q$

Tank fills in r hours

So,

$$1/r = 1/p - 1/q$$

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