

Quantitative Aptitude for RRB NTPC (Solutions)

S1. Ans.(c)

Sol.

Let CP $\rightarrow$ 100

$$MP = 100 \times \frac{140}{100} = 140$$

$$SP = 140 \times \frac{90}{100} = 126$$

$$\text{Profit} = 126 - 100 = 26r$$

$$\text{Actual profit} = 468 \times \frac{100}{90} = 520 \text{ Rs}$$

$$26r \rightarrow 520 \text{ Rs}$$

$$1r \rightarrow 20 \text{ Rs}$$

$$100r \rightarrow 2000 \text{ Rs}$$

S2. Ans.(a)

Sol.

$$\text{MP of 15 chairs} = 15 \times 300 = 4500 \text{ Rs}$$

$$\begin{aligned} \text{SP of 15 chairs} &= 12 \times 300 + 3 \times 225 \\ &= 3600 + 675 = 4275 \end{aligned}$$

$$\text{Discount} = 4500 - 4275 = 225$$

$$\text{Discount \%} = \frac{225}{4500} \times 100 = 5\%$$

S3. Ans.(a)

Sol.

$$\frac{800 \times r \times 2}{100} - \frac{400 \times 2 \times r}{100} = 40$$

$$16r - 8r = 40$$

$$r = 5\%$$

S4. Ans.(a)

Sol.

Speed of Abhay $\rightarrow$ a

Speed of Sameer $\rightarrow$ s

$$\frac{30}{a} - \frac{30}{s} = 2$$

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$$\frac{30}{s} - \frac{30}{2a} = 1$$

$$\frac{30}{a} - 2 - \frac{30}{2a} = 1$$

$$\frac{60 - 30}{2a} = 3$$

$$10 = 2a$$

$$a = 5 \text{ km/hr}$$

S5. Ans.(c)

Sol.

$$2^x = 4^y = 8^z$$

$$2^x = 2^{2y}$$

$$x = 2y$$

$$2^{2y} = 2^{3z}$$

$$2y = 3z$$

$$y = \frac{3}{2}z$$

$$x = 2 \times \frac{3}{2}z$$

$$= 3z$$

$$xyz = 288$$

$$3z \times \frac{3}{2}z \times z = 288$$

$$z^3 = 32 \times 2$$

$$z^3 = 64$$

$$z = 4$$

$$x = 3z = 4 \times 3 = 12$$

$$y = \frac{3}{2} \times 4 = 6$$

$$\frac{1}{2x} + \frac{1}{4y} + \frac{1}{8z}$$

$$\frac{1}{2 \times 12} + \frac{1}{4 \times 6} + \frac{1}{8 \times 4}$$

$$= \frac{1}{24} + \frac{1}{24} + \frac{1}{32}$$

$$= \frac{4 + 4 + 3}{96}$$

$$= \frac{11}{96}$$

S6. Ans.(a)

Sol.

$$\frac{4}{3}\pi R^3 = \frac{1}{3}\pi r^2 \times 2r + \pi r^2 \times 2r$$

$$\frac{4}{3}\pi R^3 = \frac{2}{3}\pi r^3 + 2\pi r^3$$

$$4R^3 = 8r^3$$

$$R^3 = 2r^3$$

$$R = 2^{\frac{1}{3}} r$$

S7. Ans.(a)

Sol.

$$\text{Area of rhombus} = \frac{1}{2} d_1 \times d_2$$

$$d_1 : d_2 = 2 : 5$$

$$d_1 = 2x$$

$$d_2 = 5x$$

$$\text{Area of square on shorter diagonal} = (2x)^2 = 4x^2$$

$$\text{Area of rhombus} = \frac{1}{2} \times d_1 \times d_2 = \frac{1}{2} \times 2x \times 5x = 5x^2$$

$$\text{Ratio} = 5x^2 : 4x^2$$

$$= 5 : 4$$

S8. Ans.(b)

Sol.

$$3x + 2y = 11$$

$$Kx + 4y = 22$$

Condition of confident lines

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

$$\frac{3}{K} = \frac{2}{4}$$

$$K = 6$$

S9. Ans.(b)

Sol.

Let the bought 60 oranges

Price of 60 oranges at 20 to Rs 60

$$= 60 \times 3$$

$$= 180 \text{ Rs}$$

Price of 60 oranges at 30 for Rs 60

$$= 60 \times 2$$

$$= 120 \text{ Rs}$$

$$\text{Total CP} = 180 + 120$$

$$= 300 \text{ Rs}$$

SP of 120 oranges

$$= \frac{60}{25} \times 120$$

$$= 288 \text{ Rs}$$

$$\text{Loss \%} = \frac{12}{300} \times 100$$

$$= 4\%$$

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S10. Ans.(d)

Sol.

$$\text{Work done by } (P + Q + R) = 1 \quad \dots(i)$$

$$\text{Work done by } (P + Q) = \frac{19}{23} \quad \dots(ii)$$

$$\text{Work done by } (Q + R) = \frac{8}{23} \quad \dots(iii)$$

From (i) + (iii) - (ii) -

$$Q = \frac{19}{23} + \frac{8}{23} - 1 = \frac{4}{23}$$

$$\text{work of } Q = \frac{4}{23} \times 5750 = 1000$$

S11. Ans.(c)

Sol.

$$\text{Salary} \rightarrow 100$$

$$\text{What she decided to donate} = 8$$

$$\text{She donated} = 8 \times \frac{80}{100} = 6.4$$

$$6.4 \text{ r} \rightarrow 2240$$

$$1 \text{ r} \rightarrow 350$$

$$100 \text{ r} \rightarrow 35000 \text{ Rs}$$

S12. Ans.(a)

Sol.

$$\text{Let price of radio} \rightarrow 100$$

$$\text{Sale of radio} \rightarrow 100$$

$$\text{Total sale} \Rightarrow 10000$$

$$\text{Reduced price} = 100 \times \frac{80}{100} = 80$$

$$\text{Increased sale} = 100 \times \frac{180}{100} = 180$$

$$\text{Total sale} = 80 \times 180 = 14400$$

$$\% \text{ increase in sale} = \frac{4400}{10000} \times 100 = 44\%$$

S13. Ans.(a)

Sol.

$$\text{Price ratio} \Rightarrow 100 : 107$$

$$\text{Consumption} \left(\propto \frac{1}{\text{Price}} \right) \text{ Ratio}$$

$$\Rightarrow 107 : 100$$

$$\% \text{ reduction in consumption} = \frac{7}{107} \times 100$$

$$= \frac{7}{107} \%$$

S14. Ans.(a)

Sol.

$$A = \frac{120}{100} C$$

$$C = \frac{75}{100} B$$

$$A : C \Rightarrow 6 : 5$$

$$C : B \Rightarrow 3 : 4$$

$$A : C : B \Rightarrow 18 : 15 : 20$$

$$A's \text{ amount} = 4558 \times \frac{18}{53}$$

$$= 86 \times 18$$

$$= 1548$$

S15. Ans.(d)

Sol.

$$\text{Height climbed in 1st hour} = 192 \times 62\frac{1}{2}\%$$

$$= 192 \times \frac{5}{8} = 24 \times 5 = 120$$

$$\text{Remaining height} = 192 - 120 = 72$$

$$\text{Height climbed in second hour} = 72 \times \frac{25}{200} = 9 \text{ m}$$

S16. Ans.(c)

Sol.

Let original number 100

$$125r - 70r \Rightarrow 22$$

$$55r \Rightarrow 22$$

$$1r = \frac{2}{5}$$

$$100r = \frac{2}{5} \times 100 = 40$$

$$\text{Original number} = 40$$

S17. Ans.(a)

Sol.

$$\frac{12}{100} \times \frac{75}{100} \times x - \frac{5x}{100} = 75$$

$$x \left(\frac{9}{100} - \frac{5}{100} \right) = 75$$

$$x \times \frac{4}{100} = 75$$

$$x = 25 \times 75 = 1875$$

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2 PM to 3 PM

S18. Ans.(d)

Sol.

Let salary of Saroj = 100

Salary of Raju = 80

Salary of Ram = 70

$$\text{Required \%} = \frac{10}{70} \times 100$$

$$= \frac{100}{7} = 14.28\%$$

S19. Ans.(b)

Sol.

Let traction $\rightarrow \frac{x}{y}$

ATQ,

$$\frac{2x \times \frac{110}{100}}{3y \times \frac{70}{100}} = \frac{11}{100} \times \frac{16}{21}$$

$$\frac{2x \times 11}{3y \times 7} = \frac{11 \times 16}{100 \times 21}$$

$$\frac{x}{y} = \frac{8}{100} = \frac{2}{25}$$

S20. Ans.(d)

Sol.

Let total no. of student in school $\rightarrow 100$

Boys = 65

Girls = 35

$$\text{Girls present} = \frac{35 \times 80}{100} = \frac{280}{10} = 28$$

Total no. of student present = 70

No. of boy's present = 70 - 28 = 42

$$\text{Fraction of boy's present} = \frac{42}{65}$$

S21. Ans.(a)

Sol.

$$\begin{array}{r} +1 \quad +6 \quad +2 \quad \leftarrow \text{Remainders} \\ 1234 \times 12345 \times 2378 \end{array}$$

$$= \frac{1 \times 6 \times 2}{9}$$

$$= \frac{12}{9}$$

Remainder $\Rightarrow +3$

S22. Ans.(b)

Sol. Let fixed charges $\rightarrow x$

Additional charge/km $= y$

$$10y + x = 350$$

$$25y + x = 800$$

$$\underline{15y = 450}$$

$$y = 30$$

$$x = 50$$

$$\text{Charges for 30 km} = 50 + 30 \times 30$$

$$= 50 + 900 = 950 \text{ Rs.}$$

S23. Ans.(b)

Sol.

$$\frac{4}{9} \Rightarrow 0.44$$

$$\sqrt{\frac{9}{49}} = \frac{3}{7} = 0.42$$

$$0.45 = 0.45$$

$$(0.8)^2 = 0.64$$

$$\text{Least Number} = \sqrt{\frac{9}{49}}$$

S24. Ans.(b)

Sol. Number $= 56k + 29$

$$\Rightarrow \frac{56k + 29}{8}$$

$$\begin{array}{r} 56k \\ 8 \\ \hline \downarrow \text{Remainder} \\ 0 \end{array} + \begin{array}{r} 29 \\ 8 \\ \hline \downarrow \text{Remainder} \\ 5 \end{array}$$

S25. Ans.(a)

Sol.

$$4^{61} + 4^{62} + 4^{63}$$

$$= 4^{61}(1 + 4 + 4^2)$$

$$= 21 \times 4^{61}$$

The number is divisible by 3

S26. Ans.(d)

Sol. Let the number be $\rightarrow x$

ATQ,

$$\frac{8x}{7} - \frac{7x}{8} = 15$$

$$\frac{64x - 49x}{56} = 15$$

$$\frac{15x}{56} = 15$$

$$x = 56$$

$$\text{Sum of digits} = 5 + 6 = 11$$

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S27. Ans.(d)

Sol.

Let 2 parts are x & $(37 - x)$

$$5x + 11(37 - x) = 227$$

$$5x + 407 - 11x = 227$$

$$-6x = -180$$

$$x = 30$$

Two parts are $\Rightarrow 30$ & 7

S28. Ans.(a)

Sol.

Let income $\rightarrow 1$

Income Remaining after spending on food & house rent.

$$= 1 - \frac{1}{4} - \frac{2}{3}$$
$$= \frac{12 - 3 - 8}{12} = \frac{1}{12}$$

$$\frac{1}{12} \Rightarrow 360$$

$$1 \rightarrow 630 \times 12$$

$$\Rightarrow 7560$$

$$\text{House Rent} = 7560 \times \frac{2}{3}$$

$$= 2520 \times 2$$

$$= 5040$$

S29. Ans.(a)

Sol.

$$\frac{1}{15} + \frac{1}{35} + \frac{1}{63} + \frac{1}{99} + \frac{1}{143}$$
$$\Rightarrow \frac{1}{3 \times 5} + \frac{1}{7 \times 5} + \frac{1}{7 \times 9} + \frac{1}{9 \times 11} + \frac{1}{11 \times 13}$$
$$= \frac{1}{2} \times \left(\frac{1}{3} - \frac{1}{5} + \frac{1}{5} - \frac{1}{7} + \frac{1}{7} - \frac{1}{9} + \frac{1}{9} - \frac{1}{11} + \frac{1}{11} - \frac{1}{13} \right)$$
$$= \frac{1}{2} \left(\frac{1}{3} - \frac{1}{13} \right)$$
$$= \frac{1}{2} \left(\frac{13 - 3}{3 \times 13} \right)$$
$$= \frac{5}{39}$$

S30. Ans.(d)

Sol.

Let the number of members $\rightarrow x$

Each number contributed $\Rightarrow 2x$

$$2x \times x = 3042$$

$$x^2 = 1521$$

$$x = 39$$

