Quantitative Aptitude for RRB NTPC (Solutions)

S1. Ans.(b)

Sol. C.P of Mixture = $20 \times \frac{100}{125} = 16$ Rs.

Using Alligation

25		0
	16	
16	:	9

S2. Ans.(b)

Sol. Price of 7 kg tea = 7 × 280 = 1960 Rs.

Price 9 kg tea = 9 × 240

= 2160 Rs.

Average Price

$$= \frac{1960 + 2160}{16}$$

= 257.50 Rs.

S3. Ans.(b)

Sol. Using Alligation

30		50
	45	
5	:	15
1	:	3

S4. Ans.(a)

Sol.

Milk	:	Water
7	:	2
7	:	3

(7 + 2)r → 729 liters

9r → 729 liters

1r → 81 liters

Water Added = (3 – 2) r

= 1r

= 81 liters

S5. Ans.(a)

Sol.

	Zinc	:	Copper
Ist alloy →	1	:	2

Zinc $\Rightarrow \frac{1}{1+2} = \frac{1}{3}$

IInd alloy $\Rightarrow 2 : 3$

Zinc $= \frac{2}{5}$

Mixture $\rightarrow 5 : 8$

Zinc $= \frac{5}{13}$

Using Alligation

$$\frac{1}{3} \qquad \frac{2}{5}$$

$$\frac{\frac{5}{13}}{\frac{2}{5}-\frac{5}{13} \;:\; \frac{5}{13}-\frac{1}{3}}$$

$$\frac{26-25}{65} : \frac{15-13}{39}$$

$$\frac{1}{65} : \frac{2}{39}$$

$3 : 10$

S6. Ans.(b)

Sol.

	A	:	B
x liters	→ 4	:	1
x −10 +10	→ 2	:	3×2

$\Rightarrow$ x liter

x liter	→	4	:	1
x liter	→	4	:	6

(6 − 1) r → 10 liters

5r → 10 liters

1r → 2 liters

Initially Quantity of liquid A = 4r

= 4 × 2

= 8 liters

S7. Ans.(c)

Sol.

Milk	:	Water
2	:	1
1	:	2×2
2	:	1
2	:	4

(2 + 1) r → 75 liters

1r → 25 liters

Water Added = (4 – 1) r

= 3r = 3 × 25

= 75 liters

S8. Ans.(c)

Sol.

Gold	:	Copper
A→ 5	:	3
Gold ⇒ $\frac{5}{8}$,		Copper ⇒ $\frac{3}{8}$
B→ 5	:	11
Gold ⇒ $\frac{5}{16}$,		Copper = $\frac{11}{16}$

Mixture Gold = $\frac{5}{8}+\frac{5}{16}$

= $\frac{15}{16}$

Copper $\frac{3}{8}+\frac{11}{16}$

= $\frac{17}{16}$

Gold : Copper = $\frac{15}{16}:\frac{17}{16}$

= 15 : 17

S9. Ans.(a)

Sol.

	Gold	:	Silver
Ist Alloy →	7	:	22

Gold = 7/29

IInd Alloy → 21 : 37

Gold = 21/58

Mixture → 25 : 62

Gold = 25/87

Using Alligation

$$\frac{7}{29} \qquad \frac{21}{58}$$

$$\frac{25}{87}$$

$$\frac{21}{58}-\frac{25}{87} : \frac{25}{87}-\frac{7}{29}$$

$$\frac{63-50}{174} : \frac{25-21}{87}$$

$$\frac{13}{174} : \frac{4}{87}$$

$$13 : 8$$

S10. Ans.(c)

Sol.

Let Principal → P

$$\frac{P \times 15 \times 15}{12 \times 100 \times 2} - \frac{P \times 8 \times 25}{12 \times 100 \times 2} = 32.50$$

$225P - 200P = 32.50 \times 12 \times 100 \times L$

$25P = 32.50 \times 12 \times 100 \times 2$

P = Rs. 3120

S11. Ans.(b)

Sol.

Price of 10 kg wheat = 8 × 10

⇒ 80 Rs.

Price of 15 kg wheat = 10 × 15

= Rs. 150

Price 25 kg wheat = 80 + 150

⇒ 230

Average Price per kg

$= \frac{230}{25} = 9.2$ Rs.

S12. Ans.(d)

Sol.

Mixture → 40 liter

M : W → 90 : 10

9 : 1

Milk $= 40 \times \frac{9}{10} = 36$ liters

Water = 40 – 36 = 4 liters

New Milk : Water = 80 : 20

= 4 : 1

$$\frac{36}{4+x}=\frac{4}{1}$$
$36 = 16 + 4x$
$20 = 4x$
$x = 5$ liters

S13. Ans.(b)
Sol.
Solution → 3 liters
Sugar = 60%, Water = 40%
Sugar = $3 \times \frac{60}{100}$ = 1.8 liters
Water = $3 \times \frac{40}{100}$ = 1.2 liters
New 1 liters of water is added.
Quantity of sugar in New solution = 1.8 liters
Total quantity of solution
= 3 + 1
= 4 liters
% of sugar = $\frac{1.8}{4} \times 100$
= 45%

S14. Ans.(a)
Sol.
S.P of Mixture = 68.20/kg
C.P of Mixture = $68.20 \times \frac{100}{110}$
= 62 Rs./kg
Using Alligation

60 65
62
Ratio → 3 : 2

S15. Ans.(b)
Sol.
Wine : Water
3 : 1
Let Wine → 3
Water → 1
Let x quantity of Mixture is taken ratio of Wine & Water in the mixture taken out → 3 : 1
Wine in x quantity taken out
$= x \times \frac{3}{4}$
$= \frac{3x}{4}$

Water in x quantity of mixture taken out

$= \frac{x}{4}$

Wine in new mixture

$\Rightarrow 3 - \frac{3x}{4}$

Water in new mixture

$\Rightarrow 1 - \frac{1x}{4} + x$

$$\frac{3 - \frac{3x}{4}}{1 - \frac{1x}{4} + x} = \frac{1}{1}$$

$$\frac{\frac{12 - 3x}{4}}{\frac{4 - x + 4x}{4}} = \frac{1}{1}$$

12 – 3x = 4 + 3x

6x = 8

x = 4/3

Quantity taken out = 4/3

$$\text{Fraction} = \frac{\frac{4}{3}}{\frac{4}{1}} = \frac{4}{3 \times 4}$$

$= \frac{1}{3}$

S16. Ans.(d)

Sol.

Using Alligation

Boys		Girls
50		70
	60	
10	:	10
1	:	1

No. of Boys & Girls are equal

Number of girls= $\frac{12500}{2}$

= 6250

S17. Ans.(d)

Sol.

Original quantity = 81 liters

Quantity taken out = $\frac{81}{3}$

= 27 liters

Using formula

Final quantity

$= \text{Original quantity} \left(1 - \frac{\text{Quantity taken out}}{\text{Original quantity}}\right)$

n = number of times process repeated

Final quantity

$= 81\left(1-\frac{27}{81}\right)^2$

$= 81 \times \left(\frac{2}{3}\right)^2$

$= 81 \times \frac{4}{9} = 36$ liters

In 81 liters

Quantity of Milk = 36 liters

Quantity of Water = 81 – 36

= 45 liters

Ratio of Milk & Water in New Mixture

⇒ 36 : 45 ⇒ 4 : 5

S18. Ans.(d)

Sol.

	Milk	:	Water
Original →	7	:	3 × 2
After adding water →	2	:	1 × 7

Ratio of Milk will remain same.

	Milk	:	Water
⇒	14	:	6
⇒	14	:	7

(14 + 6) r = 80 liters

20r → 80 liters

1r → 4 liters

Ratio of water Added = (7 – 6)

= 1r

Water Added = 1 × 4

⇒ 4 liters

S19. Ans.(c)

Sol. Quantity of Milk is vessel A = 4/9

Quantity of Milk in vessel B = 5/6

Quantity of Milk in mixture = 5/9

Using Alligation

$\frac{4}{9}$ $\qquad$ $\frac{5}{6}$

$\frac{5}{9}$

$\frac{5}{6}-\frac{5}{9} \quad : \quad \frac{5}{9}-\frac{4}{9}$

$\frac{15-10}{18} \quad : \quad \frac{1}{9}$

$\frac{5}{18} \quad : \quad \frac{1}{9}$

⇒ 5 : 2

S20. Ans.(b)

Sol.

Milk	:	Water
7	:	5
7	:	8

$(8-5)\ r \rightarrow 15$ liters

$3r \rightarrow 15$ liters

$1r \rightarrow 5$ liters

$8r \rightarrow 5 \times 8 = 40$ liters

Quantity of water = 40 liters

S21. Ans.(d)

Sol.

S.P of Sugar = Rs. 16

There is no loss & gain

∴ C.P of Sugar = Rs. 16

Using Alligation

20		15
	16	
1	:	4

S22. Ans.(a)

Sol.

	Milk		Water
1st Glass →	3	:	5

Milk in Glass 1 = 3/8

2nd Glass →	6	:	1

Milk in Glass 2 = 6/7

New Mixture → 1 : 1

Milk in Mixture = 1/2

Using Alligation

$\frac{3}{8}$		$\frac{6}{7}$
	$\frac{1}{2}$	
$\frac{6}{7}-\frac{1}{2}$	:	$\frac{1}{2}-\frac{3}{8}$

$\frac{12-7}{14} : \frac{4-3}{8}$

$\frac{5}{14} : \frac{1}{8}$

20 : 7

S23. Ans.(c)
Sol.

Milk : Water

90 : 10

9 : 1

After adding 20% water ⇒ 80 : 20

⇒ 4 : 1

9 : 1 × 4

4 : 1 × 9

36 : 4

36 : 9

(36 + 4)r → 40 L

40r → 40 L

1r → 1 L

(9 – 4)r ⇒ 5r

⇒ 5 × 1

= 5 liters

S24. Ans.(a)
Sol.

	Wine	:	Water
Ist →	3	:	2
IInd →	4	:	5
Mixture →	1	:	1

Wine in 1st Mixture = $\frac{3}{5}$

Wine in 2nd Mixture = $\frac{4}{9}$

Wine in Mixture = $\frac{1}{2}$

Using Alligation

$\frac{3}{5}$ $\frac{4}{9}$

$\frac{1}{2}$

$\frac{1}{2}-\frac{4}{9}$: $\frac{3}{5}-\frac{1}{2}$

$\frac{9-8}{18}$: $\frac{6-5}{10}$

$\frac{1}{18}$: $\frac{1}{10}$

5 : 9

Let x liters of Mixture 1st is taken

$$\frac{5}{9}=\frac{x}{3}$$

$$x=\frac{5}{3}$$

$$=1\frac{2}{3}\text{ liters}$$

S25. Ans.(a)

Sol.

Total days ⇒ 21 + 30 + 31 + 31 + 10

⇒ 123 days

$$S.I=\frac{7300\times 123\times 5}{365\times 100}$$

= 123 Rs.

S26. Ans.(c)

Sol.

His gain =

$$\frac{5000\times 25\times 2}{4\times 100}-\frac{5000\times 4\times 2}{100}$$

= 625 – 400

= 225 Rs.

S27. Ans.(b)

Sol.

$$\frac{n_1-1}{t_1}=\frac{n_2-1}{t_2}$$

$$\frac{3-1}{20}=\frac{2-1}{t_2}$$

t_2 = 10 years

S28. Ans.(d)

Sol.

$$P\left(1+\frac{r}{100}\right)^2=1440$$

$$P\left(1+\frac{r}{100}\right)^3=1728$$

$$\frac{P\left(1+\frac{r}{100}\right)^2}{P\left(1+\frac{r}{100}\right)^3}=\frac{1440}{1728}$$

$$\frac{1}{\left(1+\frac{r}{100}\right)}=\frac{10}{12}$$

$$\frac{12}{10}=1+\frac{r}{100}$$

$$\frac{12}{10}=\frac{100+r}{100}$$

$120 = r + 100$

$r = 20\%$

S29. Ans.(d)

Sol. C.I for two successive years = Rs. 225 & Rs. 238.50

$$\text{Rate \%} = \frac{238.50-225}{225}\times 100$$

$$=\frac{13.50}{225}\times 100$$

$$=\frac{1350}{225}$$

$= 6\%$

S30. Ans.(c)

Sol.

SI for 2 years

$$=\frac{P\times R\times t}{100}$$

$$=\frac{5000\times 10\times 2}{100}$$

= 1000 Rs.

C.I at compounded semi annually

$$\text{Rate} = \frac{10}{2} = 5\%$$

Time = $2 \times 2 =$ 4 semi years

$$\text{C.I} = 5000\left[\left(1+\frac{5}{100}\right)^4-1\right]$$

$$= 5000\left[\left(\frac{21}{20}\right)^4-1\right]$$

$$= 5000\left[\frac{194481}{160000}-1\right]$$

$$= 5000\times\frac{34481}{160000}$$

$$=\frac{172405}{160}$$

$\cong 1077.50$

Sita will have $\Rightarrow$ 1077.50 – 1000

$\Rightarrow$ 77.50 Rs. more