Quantitative Aptitude for RRB NTPC (Solutions)

S1. Ans.(b)

Sol.

$x - y = 2$

$x^2 - y^2 = 28$

$(x - y)(x + y) = 28$

$$\begin{array}{r} x + y = 14 \\ \hline 2x = 16 \end{array}$$

$x = 8$

$y = 6$

$x + y = 8 + 6 = 14$

S2. Ans.(a)

Sol.

$5\% = \frac{1}{20}$

$$\begin{array}{ll} 20 & 21 \\ 20 & 21 \\ 20 & 21 \\ 20 & 21 \\ \hline 160000 : & (21)^4 \end{array}$$

$160000r \rightarrow 160000$

$1r \rightarrow 1$

$(21)^4 r \rightarrow 194481$

S3. Ans.(b)

Sol.

$$\begin{array}{r} x + y = 100 \\ x - y = 50 \\ \hline 2x = 150 \end{array}$$

$x = 75$

$y = 25$

$x : y \Rightarrow 75 : 25$

$3 : 1$

S4. Ans.(a)
Sol.

$$\frac{25}{625} = \frac{1}{25}$$

S5. Ans.(d)
Sol.
Sum of 5 = 9 × 5 = 45
Sum of 3 = 3 × 7 = 21
Sum of other 2 = 24
Average of other 2 = 24/2= 12

S6. Ans.(a)
Sol.

$$\sqrt{10} \times \sqrt{15} = \sqrt{150} = \sqrt{25 \times 6} = 5\sqrt{6}$$

S7. Ans.(c)
Sol.

$$\frac{1}{20} = \frac{3}{\text{time}}$$

time = 60 years

S8. Ans.(c)
Sol.

$$\frac{20}{100} x = 10$$

x = 50

S9. Ans.(b)
Sol.
L.C.M of ⇒ 20, 18, 30
⇒ 180
The number is ⇒ 180 + 9
= 189

S10. Ans.(a)
Sol.

$$35\% = \frac{35}{100} = \frac{7}{20}$$

The fraction is 7/20

S11. Ans.(a)

Sol.

Number = 169k + 78

$$\frac{169k + 78}{13}$$

$$= \underset{\downarrow \text{ Remainder } 0}{\frac{169k}{13}} + \underset{\downarrow \text{ Remainder } 0}{\frac{78}{13}}$$

= 0

S12. Ans.(d)

Sol.

Price → 100 : 120

5 : 6

Consumption → 6 : 5

Reduction in Consumption

$$= \frac{1}{6} \times 100$$

$$= \frac{50}{3} = 16\frac{2}{3}\%$$

S13. Ans.(c)

Sol.

Quantity of zinc = $100 \times \frac{7}{20}$

= 35 kg

S14. Ans.(a)

Sol.

5r → 25000

1r → 5000

Total Amount = 20 × 5000

= 100000

S15. Ans.(d)

Sol.

x, y, z be 3 numbers

x + y + z = 405

x + y + 180 = 405

$$x + y = 225$$

$$\underline{x - y = 25}$$

$$2x = 250$$

x = 125
y = 225 – 125
= 100
z= 405-100-125=180
Smallest Number = 100

S16. Ans.(a)
Sol.
For 2 years →

$$C.I - S.I = P\left(\frac{r}{100}\right)^2$$

$$1.50 = P\left(\frac{1}{20}\right)^2$$

$$1.50 = P \times \frac{1}{400}$$

P = 600 Rs.

S17. Ans.(b)
Sol.

$$27\frac{1}{2} = \frac{55}{2}\%$$

$$\frac{55}{200} \times x = 275$$

$$\frac{55}{100} \times x = 550$$

55% of x = 550

S18. Ans.(d)
Sol.

$$\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$$

6 : 4 : 3
13r → 624
1r → 48
Least Share = 3 × 48
= 144

S19. Ans.(c)
Sol.

$$u - v = \frac{13}{5}$$

$$u + v = \frac{28}{5}$$

$$2u = \frac{41}{5}$$

u = 4.1

4.1 – v = 2.6

v = 4.1 – 2.6

= 1.5 km/hr

S20. Ans.(d)

Sol.

Distance travelled by

A is 4 hours

$= 4 \times 4$

= 16 km

Time taken by B to catch A $= \frac{16}{10-4} = \frac{16}{6}$

Distance from the original point $= \frac{16 \times 10}{6} = \frac{80}{3}$

= 26.66 km

S21. Ans.(a)

Sol.

$\frac{x}{a} + \frac{y}{b} = 1$

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

4x + 3y = 12

S22. Ans.(b)

Sol.

m = 4, n = 3

$x = \frac{mx_2 - nx_1}{m-n}$

$= \frac{4 \times 2 - 3 \times 5}{4-3}$

$= \frac{8-15}{1} = -7$

$y = \frac{my_2 - ny_1}{m-n}$

$= \frac{4 \times (-3) - 3 \times (-5)}{4-3}$

$= \frac{-12+15}{1} = 3$

(–7, 3)

S23. Ans.(d)
Sol.

$\sqrt{(3-x)^2+(-6-0)^2}=10$
$(3-x)^2+(6+0)^2=100$
$(x-3)^2+(0+6)^2=100$
$(x-3)^2+36=10$
$(x-3)^2=64$
$x-3=8$
$x=11$

S24. Ans.(d)
Sol.

$\text{Distance}=\sqrt{a^2\cos^2 35^\circ+a^2\cos^2 65^\circ}$
$=a\sqrt{\cos^2(90^\circ-65^\circ)+\cos^2 65^\circ}$
$=a\sqrt{\sin^2 65^\circ+\cos^2 65^\circ}$
$=a$

S25. Ans.(a)
Sol.

Midpoint of AC
$=\frac{x+1}{2},\quad \frac{6+2}{2}$
$=\frac{x+1}{2},\quad 4$
Midpoint of BD
$=\left(\frac{4+3}{2},\quad \frac{y+6}{2}\right)$
$=\left(\frac{7}{2},\quad \frac{y+6}{2}\right)$

$\frac{x+1}{2}=\frac{7}{2}$	$\frac{y+6}{2}=4$
$2x+2=14$	$y+6=8$
$x=6$	$y=2$

S26. Ans.(d)
Sol.

$m:n=1:2$
$m=1, n=2$
$x=\frac{3\times 1+7\times 2}{2}$
$=\frac{3+14}{2}=\frac{17}{2}$

$$y = \frac{4 \times 1 - 12}{2}$$
$$= \frac{4 - 12}{2}$$
$$= \frac{-8}{2} = -4$$
Point (17/2, –4)
Lies is 4th Quadrant

S27. Ans.(b)
Sol.
$$x = \frac{2 + 1}{2} = \frac{3}{2}$$
$$y = \frac{-3 + 1}{2} = -1$$
(x, y) ⇒ (3/2, –1)
These coordinates satisfies equation (b)
6x + y = 8

S28. Ans.(c)
Sol. Let the third vertex be (x, y)
Coordinates of centroid ⇒ (0, 0)
Centroid of triangle
$$= \left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}\right)$$
$$\frac{x - 3 + 0}{3} = 0$$
x = 3
$$\frac{y + 1 - 2}{3} = 0$$
y = 1
Third point ⇒ (3, 1)

S29. Ans.(d)
Sol. Coordinates of the origin⇒ (0, 0)
The only equation satisfying coordinate (0, 0) is x = 4y

S30. Ans.(c)
Sol. Length of perpendicular
$$= \frac{a \propto + b\beta + c}{\sqrt{a^2 + b^2}}$$
$$= \frac{3 \times 4 + 4 \times 5 - 10}{\sqrt{9 + 16}}$$
$$= \frac{12 + 20 - 10}{\sqrt{25}}$$
= 22/5