RRB NTPC - PRACTICE SET
Answers with Explanation (Math & GI)

1. (d)

2. (b)

33
3   4   10   (32)   136   685   4116
×1+1 ×2+2 ×3+3 ×4+4 ×5+5 ×6+6

3. (b)

F A V O U R
−1 +1 −1 +1 −1 +1
E B U P T S

Similarly

D A N G E R
−1 +1 −1 +1 −1 +1
C B M H D S

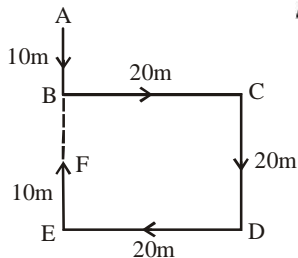**4. (b)** Girl's father's only son––Girl's brother, Paternal grandmother of girl's brother—Girl's paternal grandmother, Daughter-in-law of girl's paternal grandmother—Girl's mother.

5. (d)

6. (a)

Ate only fish
Ate both fish and meat
Ate only meat
Vegetarians

7. (b)

A
10m ↓
B 20m → C
10m ↑F 20m ↓
E 20m D
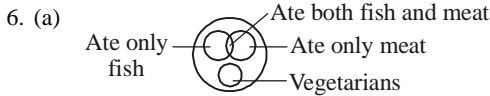
Clearly, Sanjeev's distance from starting point A
= AF = (AB + BF)
= AB + (BE − EF) = AB + (CD − EF)
= [10 + (20 − 10)]m = (10 + 10)m = 20m.
Also, F lies to the South of A.
So, Sanjeev is 20 metres to the south of his starting point.

8. (a)

9. (b)

10. (b) Deepti's new position is 17th from the left and 13th from the right.
So, number of children in the row = (16+1+12) = 29
Kashish's new position is Deepti's earlier position which is 9th from the left.
Hence, Kashish's new position is (29−9)+1 = 21st from the right.

11. (b) Using the correct symbols, we have :
Given expression = (3×15+19)÷8–6 = 64÷8–6
= 8–6 = 2

12. (b) A+B > C+D, C+D > B+E, B+E = 2C ⇒ A+B > 2C

13. (b) Let the number of boys be x. Then, $\frac{3}{4}$ x = 18
or x = 18 $\times \frac{4}{3}$ = 24.
If total number of students is y, then $\frac{2}{3}$ y = 24
or y = 24 $\times \frac{3}{2}$ = 36
∴ Number of girls in the class = (36–24) = 12

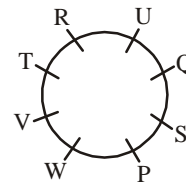**14. (d)** We have : $\sqrt{36}+\sqrt{64}+\sqrt{25}+\sqrt{49}=26$,
$\sqrt{9}+\sqrt{25}+\sqrt{16}+\sqrt{81}=21$
So, missing number = $\sqrt{25}+\sqrt{144}+\sqrt{36}+\sqrt{64}$
$= (5+12+6+8) = 31$

15. (a)

(16-17) :

R   U
T   Q
V   S
W   P

16. (c)

17. (b)

(18-19) :

	A	B	C	D	E
Profession	Horticulturist	Industrialist	Physicist	Journalist	Advocate
Preference	Tea	Coffee	Tea	Coffee	Tea

18. (c)   **19. (d)**

20. (a)   **21. (b)**

22. (c)

Bud
Flower
Tree
Leaf
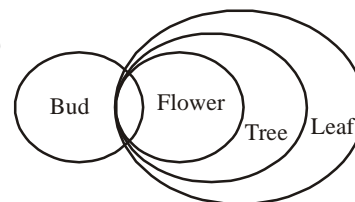
23. (c)   **24. (a)**   **25. (d)**

26. (b)   = 1 ÷ [1 + 1 ÷ {1 + 1 ÷ (1 + 1 ÷ 2)}]
$= 1 \div \left[1+1 \div \left\{ 1+1 \div \left(1+\frac{1}{2} \right) \right\} \right]$

$$= 1 \div \left[1 + 1 \div \left\{1 + 1 \div \frac{3}{2}\right\}\right]$$

$$= 1 \div \left[1 + 1 \div \left\{1 + \frac{2}{3}\right\}\right]$$

$$= 1 \div \left[1 + 1 \div \frac{5}{3}\right] = 1 \div \left[1 + \frac{3}{5}\right] = 1 \div \frac{8}{5} = \frac{5}{8}$$

27. (d) $2\sqrt[3]{40} = 4\sqrt[3]{5}$, $4\sqrt[3]{320} = 16\sqrt[3]{5}$,

$3\sqrt[3]{625} = 15\sqrt[3]{5}$

$\therefore 2\sqrt[3]{40} - 4\sqrt[3]{320} + 3\sqrt[3]{625} - 3\sqrt[3]{5}$

$= 4\sqrt[3]{5} - 16\sqrt[3]{5} + 15\sqrt[3]{5} - 3\sqrt[3]{5} = 0$

28. (d) $123 - 99 = 24 \quad 183 - 123 = 60$

$183 - 99 = 84$

HCF of 24, 60, 84 $\qquad \dfrac{12\,|\,24, \ 60, \ 84}{2, \ \ 5, \ \ 7}$

$= 12$

29. (b) $\dfrac{a}{b} = \dfrac{b}{c}$
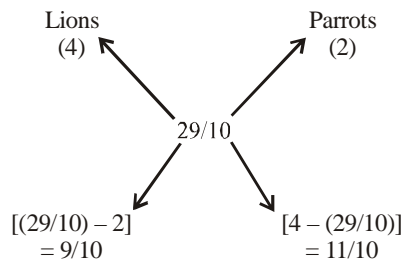
$\Rightarrow b^2 = ac \Rightarrow b^4 = a^2c^2$

$\therefore \dfrac{a^4}{b^4} = \dfrac{a^4}{a^2c^2} = \dfrac{a^2}{c^2}$

30. (a) Here, rule of alligation is applied for number of legs per head.

Average number of legs per head $= \dfrac{290}{100} = \dfrac{29}{10}$

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   Lions                    Parrots
    (4) ↖                  ↗ (2)
         ↖              ↗
            29/10
         ↙              ↘
   [(29/10) – 2]        [4 – (29/10)]
      = 9/10               = 11/10
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$\therefore$ Lions : Parrots $= 9 : 11$

Number of parrots $= \dfrac{11}{20} \times 100 = 55$

31. (a) $4200 = \dfrac{29400 \times 6 \times R}{100}$

$\Rightarrow R = \dfrac{4200}{294 \times 6} = \dfrac{50}{21} = 2\dfrac{8}{21}\%$

32. (a) Let the M.P. be Rs 100. Then, C.P. = Rs 64.

S.P. = Rs (100 – 12)

$\quad$ = Rs 88. Gain = Rs (88 – 64) = Rs 24.

Gain% $= \left(\dfrac{24}{64} \times 100\right)\% = \dfrac{75}{2}\% = 37.5\%$

33. (b) According to question,

(A's 1 day's work) : (B's 1 day's work) = 2:1

Now, (A + B)'s 1 day's work $\dfrac{1}{12}$

$\therefore$ B's 1 day's work

$= \dfrac{1}{12} \times \dfrac{1}{3} = \dfrac{1}{36}$

$\therefore$ B can finish the whole work in 36 days.

34. (d) Speed at upstream $= \dfrac{36}{6} = 6$ km/hr.

Speed at downstream $= \dfrac{48}{6} = 8$ km/hr

$\therefore$ Speed of the current $= \dfrac{8 - 6}{2} = 1$ km/hr.

35. (c) Let the average after 19th inning be x. Then, average after 18th inning = (x – 4).

$19x - 18(x - 4) = 98$

$\Rightarrow x + 72 = 98 \Rightarrow x = 26$

$\therefore$ Average after 19th inning = 26

36. (b) Number of rotations $= \dfrac{72}{12} = 6$

37. (c) (tan1°.tan89°). (tan2° . tan88°) ....tan45°

$= (tan1°.cot1°) (tan2°.cot2°) .... 1$

$= 1 \begin{bmatrix} \because tan(90° -) = cot \\ cot(90° -) = tan \ , \\ tan .cot = 1 \end{bmatrix}$

38. (b) $a^2 + b^2 + c^2 = 2(a - b - c) - 3$

$\Rightarrow a^2 + b^2 + c^2 - 2a + 2b + 2c + 3 = 0$

$\Rightarrow a^2 - 2a + 1 + b^2 + 2b + 1 + c^2 + 2c + 1 = 0$

$\Rightarrow (a - 1)^2 + (b + 1)^2 + (c + 1)^2 = 0$

$\quad$ [If $x^2 + y^2 + z^2 = 0$

$\qquad \Rightarrow x = 0; y = 0; z = 0$]

$\therefore a - 1 = 0 \Rightarrow a = 1$

$b + 1 = 0 \Rightarrow b = -1$

$c + 1 = 0 \Rightarrow c = -1$

$\therefore 2a - 3b + 4c = 2 + 3 - 4 = 1$

39. (c) 1st Part :

$$\dfrac{\dfrac{6+4+3}{12}}{\dfrac{9}{2} + \dfrac{7}{2} - \dfrac{5}{2}} = \dfrac{\dfrac{13}{12}}{\dfrac{2}{9} + \dfrac{2}{7} - \dfrac{2}{5}} = \dfrac{\dfrac{13}{12}}{\dfrac{34}{9 \times 7 \times 5}}$$

$$= \dfrac{13}{12} \times \left(\dfrac{9 \times 7 \times 5}{34}\right)$$

2nd Part :

$$\dfrac{\dfrac{28-2}{90}\times\dfrac{9}{100}\times\dfrac{35}{10}}{2\dfrac{26-2}{90}\times\dfrac{8}{100}\times\dfrac{1}{10}}=\dfrac{26\times9\times35}{204\times8\times1}$$

$$\therefore\ \dfrac{13}{12}\times\dfrac{9\times7\times5}{34}\times\dfrac{204\times8\times1}{26\times9\times35}=2$$

40. (d) $3.\overline{36}-2.\overline{05}+1.\overline{33}$

$$=3\dfrac{36}{99}-2\dfrac{05}{99}+1\dfrac{33}{99}$$

$$=3+\dfrac{36}{99}-2-\dfrac{5}{99}+1+\dfrac{33}{99}$$

$$=(3-2+1)+\left(\dfrac{36}{99}-\dfrac{5}{99}+\dfrac{33}{99}\right)$$

$$=2+\left(\dfrac{36-5+33}{99}\right)=2+\dfrac{64}{99}=2\dfrac{64}{99}=2.\overline{64}$$

41. (a) Required LCM $=\dfrac{\text{LCM of }2,3,4,9}{\text{HCF of }3,5,7,13}$

$$=\dfrac{4\times9}{1}=36$$

42.(a) Let original rate of rice be ₹ x per kg.

Reduced rate $=₹\left[(100-6.25)\times\dfrac{1}{100}\times x\right]$

$=₹\dfrac{15x}{16}$ per kg

According to the question, $\dfrac{120}{\dfrac{15x}{16}}-\dfrac{120}{x}=1$

$$\Rightarrow\dfrac{120}{x}\left(\dfrac{16}{15}-1\right)=1$$

$$\therefore\ x=₹\ 8\ \text{per kg}$$

$$\therefore\ \text{Reduced rate}=₹\left(\dfrac{15}{16}\times8\right)\text{per kg}$$

$$=₹\ 7.50\ \text{per kg}$$

43. (d) Let the sum lent at the rate of interest 5% per annum is ₹ x. and at the rate of interest 8% per annum is ₹ (1550 – x)
According to the question,

$$\dfrac{x\times5\times3}{100}+\dfrac{(1550-x)\times8\times3}{100}=300$$

$$\Rightarrow\dfrac{15x}{100}+\dfrac{37200-24x}{100}=300$$

$$\Rightarrow 15x+37200-24x=300\times100$$

$\Rightarrow 9x=7200\ \ \therefore\ x=₹\ 800$
and, $1550-x=1550-800=₹\ 750$
$\therefore$ Ratio of money lent at 5% to that at 8%
$=800:750=16:15$

44. (b) If the C.P. of article be ₹ x.

then $x\times\left(105-\dfrac{195}{2}\right)\%=12$

$$\Rightarrow x\times\dfrac{15}{200}=12$$

$$\Rightarrow x=\dfrac{12\times200}{15}=₹\ 160$$

45. (a) A's 1 day's work $=\dfrac{1}{12}$

(A + B)'s 1 day's work $=\dfrac{1}{8}$

$\therefore$ B's 1day's work $=\dfrac{1}{8}-\dfrac{1}{12}=\dfrac{3-2}{24}=\dfrac{1}{24}$

$\therefore$ B alone can do the work in 24 days.

46. (c) Let the mother's age
= x years
$\therefore$ Father's age = (x + 8) years
Sum of ages of 6 sons
$= 8\times6=48$ years
Sum of ages of 6 sons and parents
$= 22\times8=176$ years.
$\therefore$ Age of Parents = 176 – 48 = 128 years
$\Rightarrow x+x+8=128$
$\Rightarrow 2x=120\ \ \Rightarrow x=60$
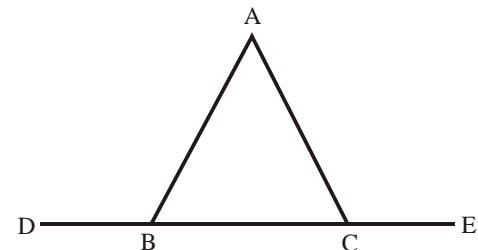Hence, mother's age = 60 years

47. (d) Count the number of odd days from the year 2007 onwards to get the sum equal to 0 odd day.

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
odd day	1	2	1	1	1	2	1	1	1	2	1

Sum = 14 odd days ≡ 0 odd day

Calendar for the year 2018 will be the same as for the year 2007.

48. (c)

$\angle ABD=120°$
$\therefore\angle ABC=180°-120°=60°$

$\angle ACE = 105°$

$\therefore \angle ACB = 180° - 105° = 75°$

$\therefore \angle BAC = 180° - 60° - 75° = 45°$

49. (b) Length of wire

$= \dfrac{22}{7} \times 42 = 132$ cm.

Let the length of rectangle

$= 6x$ and breadth $= 5x$ cm

$\therefore 2(6x + 5x) = 132$

$\Rightarrow 22x = 132 \Rightarrow x = \dfrac{132}{22} = 6$

$\therefore$ Length of rectangle $= 36$ cm and breadth $= 30$cm

$\therefore$ Area of rectangle $= 36 \times 30 = 1080$ cm^2

50. (b) $\dfrac{a^{-1}}{a^{-1} + b^{-1}} + \dfrac{a^{-1}}{a^{-1} - b^{-1}}$

$= \dfrac{\frac{1}{a}}{\frac{1}{a} + \frac{1}{b}} + \dfrac{\frac{1}{a}}{\frac{1}{a} - \frac{1}{b}} = \dfrac{\frac{1}{a}}{\frac{b+a}{ab}} + \dfrac{\frac{1}{a}}{\frac{b-a}{ab}}$

$= \dfrac{1}{a} \cdot \dfrac{ab}{b+a} + \dfrac{1}{a} \cdot \dfrac{ab}{b-a}$

$= \dfrac{b}{b+a} + \dfrac{b}{b-a}$

$= \dfrac{b(b-a) + b(b+a)}{(b+a)(b-a)} = \dfrac{b^2 - ab + b^2 + ab}{b^2 - a^2} = \dfrac{2b^2}{b^2 - a^2}$

51. (b) $2 = x + \dfrac{1}{1 + \dfrac{1}{3 + \frac{1}{4}}}$

$\Rightarrow 2 = x + \dfrac{1}{1 + \dfrac{1}{\frac{12+1}{4}}}$

$\Rightarrow 2 = x + \dfrac{1}{1 + \frac{4}{13}}$

$\Rightarrow 2 = x + \dfrac{1}{\frac{13+4}{13}} \Rightarrow 2 = x + \dfrac{1}{\frac{17}{13}}$

$\Rightarrow 2 = x + \dfrac{13}{17} \Rightarrow x = 2 - \dfrac{13}{17}$

$= \dfrac{34 - 13}{17} = \dfrac{21}{17}$

52. (b) Let two numbers of 3 digits be $310x$ and $310y$

$\therefore 310x \times 310y = 310 \times 1860 \Rightarrow x \times y = 6$

$\therefore x = 2$ and $y = 3$ i.e., 620 and 930

53. (c) Given that a = 6%

According to the formula, Increase in consumption

$= \left(\dfrac{a}{100 - a} \times 100 \right)\%$

$= \left(\dfrac{6}{94} \times 100 \right)\% = \dfrac{600}{94}\% = 6\dfrac{18}{47}\%$

54. (d) Work done by (A + B) in 20 days

$= \left(\dfrac{1}{30} \times 20 \right) = \dfrac{2}{3};$

Remaining work $= \left(1 - \dfrac{2}{3} \right) = \dfrac{1}{3}$

$\dfrac{1}{3}$ work is done by A in 20 days.

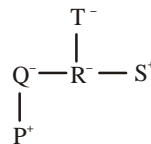Whole work is done by A in (20×3) days = 60 days

55. (a) One is x yrs, another $(x + 20)$ yrs.

$\therefore (x + 20) - 5 = 5(x - 5)$ or, $x = 10$

$\therefore$ 30, 10

96. (d) abcd / aabbccdd / aaabbbcccddd.

99. (d)

$$\begin{array}{c} T^- \\ | \\ Q^- - R^- - S^+ \\ | \\ P^+ \end{array}$$

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