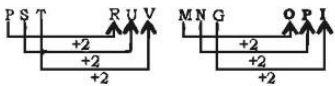


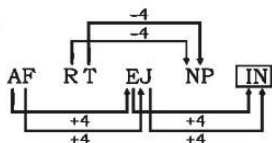
ANSWER SET - 13

- (1) 2. (2) 3. (4) 4. (2) 5. (3)
- (4) 7. (3) 8. (2) 9. (1) 10. (2)
- (4) 12. (2) 13. (2) 14. (2) 15. (3)
- (2) 17. (3) 18. (4) 19. (1) 20. (3)
- (1) 22. (4) 23. (2) 24. (4) 25. (3)
- (4) 27. (1) 28. (4) 29. (1) 30. (1)
- (2) 32. (1) 33. (1) 34. (4) 35. (1)
- (1) 37. (3) 38. (4) 39. (1) 40. (2)
- (3) 42. (2) 43. (3) 44. (1) 45. (3)
- (2) 47. (2) 48. (2) 49. (1) 50. (2)
- (2) 52. (3) 53. (2) 54. (2) 55. (1)
- (1) 57. (4) 58. (3) 59. (4) 60. (4)
- (2) 62. (2) 63. (1) 64. (1) 65. (1)
- (1) 67. (3) 68. (3) 69. (1) 70. (3)
- (3) 72. (3) 73. (2) 74. (3) 75. (1)
- (2) 77. (2) 78. (4) 79. (2) 80. (4)
- (3) 82. (1) 83. (1) 84. (4) 85. (3)
- (3) 87. (3) 88. (1) 89. (2) 90. (2)
- (2) 92. (2) 93. (3) 94. (1) 95. (3)
- (3) 97. (3) 98. (3) 99. (4) 100. (4)

EXPLANATION - 13

- (1) $\sqrt{36} = 6 \Rightarrow 6 \times (6 - 1) = 30$
 $49 = 7 \Rightarrow 7 \times (7 - 1) = 42$
- (2) Kangaroo is the national animal of Australia and **Tiger** is the national animal of Bangladesh.
- (4) $20 : \frac{20}{2} + 1 :: 84 : \frac{84}{2} + 1$
So, **43** is the answer.
- (2) 
- (3) Except option (3), In other options the positions of each letter is increased by 1.
- (4) Except **Madurai**, others are hill-stations.
- (3) $128 \Rightarrow 1 + 2 + 8 = 11 \Rightarrow 1 + 1 = 2$
 $786 \Rightarrow 7 + 8 + 6 = 21 \Rightarrow 2 + 1 = 3$
 $513 \Rightarrow 5 + 1 + 3 = 9 \neq 6$
 $719 \Rightarrow 7 + 1 + 9 = 17 \Rightarrow 1 + 7 = 8$
- (2) Second number divides the first number completely.
- (1) My father's mother is my Grandmother and her husband is **Grandfather** of me and my siblings.
- (2) 'Moon is a source of light' - The statement doesn't mean that moon is not a source of light and also doesn't mean that light has only one source. So, **neither conclusion I nor II follows**.

11. (4)



12. (2) $5 \times 2 \times 8 = 80$

$$8 \times 4 \times 3 = 96$$

$$7 \times 6 \times 5 = 210$$

13. (2) $5^3 + 8^2 = 125 + 64 = 189$

$$4^3 + 2^2 = 64 + 4 = 68$$

$$5^3 + 3^2 = 125 + 9 = 134$$

14. (2)

15. (3) C H U R C H

3 2 4 1 6 5

16. (2) The letter 'R' of POSTER is missing in word DECOMPOSITION.

17. (3) Y $\xrightarrow{-6}$ S $\xrightarrow{-6}$ M $\xrightarrow{-6}$ G

W $\xrightarrow{-6}$ Q $\xrightarrow{-6}$ K $\xrightarrow{-6}$ E

V $\xrightarrow{-6}$ P $\xrightarrow{-6}$ J $\xrightarrow{-6}$ D

18. (4) abc/ cba/ abc/ cba

19. (1) A = 1 $\Rightarrow 1^3 + 1^2 + 1 = 3$

$$B = 2 \Rightarrow 2^3 + 2^2 + 2 = 14$$

$$C = 3 \Rightarrow 3^3 + 3^2 + 3 = 39$$

$$D = 4 \Rightarrow 4^3 + 4^2 + 4 = 84$$

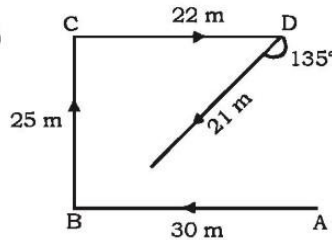
$$\therefore E = 5 \Rightarrow 5^3 + 5^2 + 5 = 155$$

20. (3) In option (3), after changing the signs we have,

$$3 + 6 - 1 = 16 \times 2 \div 4$$

$$\Rightarrow 8 = 8$$

21. (1)



So, Chahat is going in the **South-West** direction.

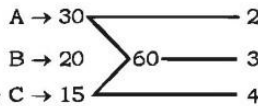
22. (4) number of triangles.

$$= \frac{4 \times 5}{2} = 10$$

23. (2)

24. (4) There will be 5 dots opposite to 2 dots.

25. (3)

51. (2) A \rightarrow 30 

B \rightarrow 20

A + B + C \rightarrow 15

Efficiency of C = 1 unit/hr

Required time to C for empty the tank = 60 hr

$$\therefore \text{Capacity of tank} = 60 \times 60 \times 15 = 54000 \text{ l}$$

52. (3) $\frac{1}{1 - \cos^2 \theta} - \frac{1}{\sec^2 \theta - 1}$

$$= \frac{1}{\sin^2 \theta} - \frac{1}{\tan^2 \theta}$$

$$= \text{cosec}^2 \theta - \cot^2 \theta = 1$$

53. (2) Required Average = $7 - 2 = 5$

54. (2) $x = 2 - 2^{\frac{1}{3}} + 2^{\frac{1}{3}}$

$$\Rightarrow x - 2 = 2^{\frac{2}{3}} - 2^{\frac{1}{3}}$$

$$\Rightarrow (x - 2)^3 = 2^2 - 2^1 - 3.2 \left(2^{\frac{2}{3}} - 2^{\frac{1}{3}} \right)$$

$$\Rightarrow x^3 - 6x^2 + 12x - 8 = 4 - 2 - 6(x - 2)$$

$$\Rightarrow x^3 - 6x^2 + 12x - 8 = 2 - 6x + 12$$

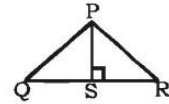
$$\Rightarrow x^3 - 6x^2 + 18x - 22 = 0$$

$$\Rightarrow x^3 - 6x^2 + 18x - 22 + 46 = 46$$

$$\Rightarrow x^3 - 6x^2 + 18x + 24 = 46$$

$$\Rightarrow x^3 - 6x^2 + 18x + 18 = 40$$

55. (1) In right angle Δ PSQ,



$$PQ^2 = PS^2 + QS^2 \quad \dots (i)$$

In Right angled Δ PRS,

$$PR^2 = PS^2 + RS^2 \quad \dots (ii)$$

By (i) and (ii)

$$PQ^2 - PR^2 = QS^2 - RS^2$$

$$PQ^2 - QS^2 = PR^2 - RS^2$$

56. (1) Let the total profit be ₹ 100
After paring charity A's share

$$= 95 \times \frac{3}{5} = ₹ 57$$

If A's share is ₹ 57, they profit = 100

If A's share is ₹ 855, they profit

$$= \frac{100}{57} \times 798 = ₹ 1400$$

60. (4) Let the speed of stream be x km/hr

ATQ,

$$\frac{60}{9+x} + \frac{60}{9-x} = 24$$

On solving, x = 6 km/hr

\therefore Required speed of stream = 6 km/hr

61. (2) A + B = 45°

We know that

$$\frac{\tan A + \tan B}{1 - \tan A \cdot \tan B} = 1$$

$$\Rightarrow \tan A + \tan B + \tan A \tan B = 1$$

$$\text{So, } 2(\tan A + \tan B + \tan A \tan B) = 2 \times 1 = 2$$

62. (2) 10% = $\frac{1}{10}$, 25% = $\frac{1}{4}$

$$SP_1 + SP_2 = 2470 \text{ [Given]}$$

	Ist		IInd
CP	10	:	4 \times 2
SP	9	:	5 \times 2
P/L	-1	:	+1 \times 2

Total selling price = (9 + 10) = 19 units

ATQ,

$$19 \text{ units} = 2470$$

$$1 \text{ unit} = \frac{2470}{19} = ₹ 130$$

$$\text{Total profit} = (2 - 1) \times 130 = ₹ 130$$

64. (1) Required length = H.C.F. of (1.8, 2.7, 3.6)m
 $= 0.9 = 90 \text{ cm}$

65. (1) $\left(x^2 + \frac{1}{x^2}\right) = x^4 + \frac{1}{x^4} + 2x^2 \cdot \frac{1}{x^2}$
 $= 119 + 2 = 121$

$$\therefore x^2 + \frac{1}{x^2} = 11$$

$$\text{again } \left(x - \frac{1}{x}\right)^2$$

$$= x^2 + \frac{1}{x^2} - 2x \cdot \frac{1}{x} = 11 - 2 = 9$$

$$\therefore x - \frac{1}{x} = 3$$

$$\Rightarrow \left(x - \frac{1}{x}\right)^3 = 3^3$$

$$\Rightarrow x^3 - \frac{1}{x^3} - 3x \cdot \frac{1}{x} \left(x - \frac{1}{x}\right) = 27$$

$$\Rightarrow x^3 - \frac{1}{x^3} - 3 \times 3 = 27$$

$$\therefore x^3 - \frac{1}{x^3} = 27 + 9 = 36$$

$$3\left(x^3 - \frac{1}{x^3}\right) = 3 \times 36 = 108$$

66. (1) $\sin 720^\circ - \cot 270^\circ - \sin 150^\circ \cdot \cos 120^\circ$
 $= \sin(2 \times 360^\circ + 0^\circ) - \cot(360^\circ - 90^\circ) - \sin(90^\circ + 60^\circ) \cdot \cos(90^\circ + 30^\circ)$
 $= \sin 0^\circ - \cot 90^\circ + \cos 60^\circ \cdot \sin 30^\circ$

$$= 0 - 0 + \left(\frac{1}{2} \times \frac{1}{2}\right) = \frac{1}{4}$$

$$\Rightarrow \sqrt{\sin 720^\circ - \cot 270^\circ - \sin 150^\circ \cos 120^\circ}$$

$$= \sqrt{\frac{1}{4}} = \frac{1}{2}$$

67. (3) Volume of cistern = $\pi r^2 h$

$$\pi r^2 h = 352,000 \text{ cm}^3$$

$$\Rightarrow \frac{22}{7} \times \frac{40}{2} \times \frac{40}{2} \times h = 352000$$

$$\Rightarrow h = \frac{352000 \times 7 \times 2 \times 2}{22 \times 40 \times 40}$$

$$\Rightarrow h = 280 \text{ cm} = 2.8 \text{ m}$$

68. (3) $\frac{\sqrt{192} - \sqrt{48}}{\sqrt{12}}$
 $= \frac{8\sqrt{3} - 4\sqrt{3}}{2\sqrt{3}} = \frac{8-4}{2} = \frac{4}{2} = 2$

69. (1) C's 1 day's work

$$= \frac{1}{2} - \left[\frac{1}{4} + \frac{1}{5}\right]$$

$$= \frac{1}{2} - \frac{9}{20} = \frac{1}{20}$$

As wages : B's wages : C's wages

$$= \frac{1}{4} : \frac{1}{5} : \frac{1}{20} = 5:4:1$$

\therefore C's share (for 2 days)

$$= ₹ \left(2 \times \frac{1}{20} \times 4000\right) = ₹ 400$$

71. (3) $\angle ABD = \angle BDC = x^\circ$ (Alternate angles)

In $\triangle BDC$, we have

$$\angle BDC + \angle DCB + \angle CBD = 180^\circ$$

$$\Rightarrow x^\circ + z^\circ + y^\circ = 180^\circ$$

$$\Rightarrow \frac{5}{3}y + \frac{7}{3}y + y^\circ = 180 \left[x = \frac{5}{3}y, y = \frac{3}{7}z \right]$$

$$\Rightarrow 5y = 180^\circ \Rightarrow y = 36^\circ$$

$$\Rightarrow \therefore x = \frac{5}{3}y = 60^\circ \text{ and}$$

$$z = \frac{7}{3}y = 84^\circ$$

Now in $\triangle ABD$,

$$x^\circ + 42^\circ + \angle BAD = 180^\circ$$

$$\Rightarrow \therefore x = \frac{5}{3}y = 60^\circ \angle BAD = 180^\circ$$

$$- 42^\circ - 60^\circ = 78^\circ$$

72. (3) $\tan(2\theta + 45^\circ) = \cot 3\theta = \tan(90^\circ - 3\theta)$

$$\Rightarrow 2\theta + 45^\circ = 90^\circ - 3\theta$$

$$\Rightarrow 5\theta = 90^\circ - 45^\circ = 45^\circ$$

$$\therefore \theta = 9^\circ$$

$$\text{So, } \sin 5\theta = \sin 45 = \frac{1}{\sqrt{2}}$$

73. (2) 20% of 18600 = 3720 crore

74. (3) Agriculture accounts for 40%

$$\text{i.e., } \left(\frac{2}{5}\right)^{\text{th}} \text{ of the GDP of India.}$$

75. (1) $(40 + 20 + 10)\%$ of 42800 = ₹ 29960 crore