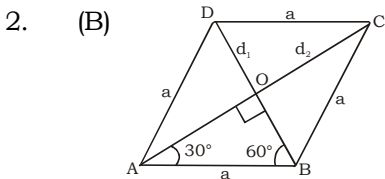


RRB ALP CBT-1
Answers with Explanation-15

1. (A) $\cos 24^\circ + \cos 5^\circ + \cos 175^\circ + \cos 204^\circ + \cos 300^\circ$
 $\Rightarrow \cos 24^\circ + \cos 5^\circ + \cos(180^\circ - 5^\circ) + \cos(180^\circ + 24^\circ)$
 $+ \cos(360^\circ - 60^\circ)$
 $\Rightarrow \cos 24^\circ + \cos 5^\circ - \cos 5^\circ - \cos 24^\circ + \cos 60^\circ$
 $\Rightarrow \cos 60^\circ = \frac{1}{2}$



ABCD is rhombus with side = 'a'
 $\angle DAB = 60^\circ \Rightarrow \angle AOB = 90^\circ$
 $\Rightarrow \angle OAB = 30^\circ$
 A.T.Q.,
 $4a = 60$
 $a = 15$ metre

In $\triangle AOB \Rightarrow \sin 30^\circ = \frac{OB}{AB} = \frac{OB}{15}$

$\Rightarrow \frac{1}{2} = \frac{OB}{15}$

$\Rightarrow OB = 7.5$

$\Rightarrow BD$ (Diagonal)(d_1) = 15 metre

Now, $\cos 30^\circ = \frac{OA}{AB}$

$\frac{\sqrt{3}}{2} = \frac{OA}{15}$

$OA = \frac{15}{2}\sqrt{3}$

AC (Diagonal)(d_2) = $15\sqrt{3}$

Area of Rhombus = $\frac{1}{2}d_1d_2$
 $= \frac{1}{2}15 \times 15\sqrt{3}$
 $= \frac{225\sqrt{3}}{2}$

3. (B) Due to reduction, we will save
 $= \frac{270 \times 10}{100} = ₹27$

New Price of rice/kg = $\frac{27}{1} = ₹27$

New Price 90% $\rightarrow 27$

Old Price 100% $\rightarrow ₹30$ /kg

4. (C) We have

$2x + \frac{1}{3x} = 6$

Multiplied by $\frac{3}{2}$ on both sides

$\frac{3}{2}\left(2x + \frac{1}{3x}\right) = 6 \times \frac{3}{2}$

$3x + \frac{1}{2x} = 9$

Square both side

$9x^2 + \frac{1}{4x^2} + 2 \times 3x + \frac{1}{2x} = 81$

$9x^2 + \frac{1}{4x^2} = 78$

5. (A) Relative speed of man & train

$= \frac{100 \times 5}{36} \times \frac{18}{5}$

$= 50$ km/h

\Rightarrow Speed of train = $50 - 5 = 45$ km/hr

6. (D)

Amount	Time	
₹520	5 Year)
₹568	7 Year	

2 Year

Hence interest in two years is ₹48

\therefore interest in one years is ₹24

interest in 5 years is $24 \times 5 = ₹120$

\Rightarrow Principal = Amount - S.I

$= 520 - 120$

$= ₹400$

7. (C)

Present Age	Father	:	Son	
(Present age of father)	8	:	3)
	2	:	(1	
	8	:	4	x4

(After 8 years age of son)

1 Unit ----- 8 Year

8 Units ----- 64 Year

Present age of Father 64 Year

8. (B) Let numbers are x & y

A.T.Q.,

$x + y = 12$

.....(i) $xy = 35$

eqⁿ (1) divided by eqⁿ (2)

$\frac{x + y}{xy} = \frac{12}{35}$

$\frac{1}{x} + \frac{1}{y} = \frac{12}{35}$

9. (D) LCM of (8, 12, 16) is 48

A.T.Q.,

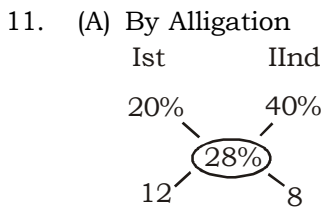
Let, $X_n = (48n + 3)$ is divisible by 7

Where n is set of natural no.

Put $n = 1$

$X_1 = 51$ is not divisible by 7
 $n = 2$
 $X_2 = 97$ is not divisible by 7
 $n = 3$
 $X_3 = 147$ is divisible by 7
 \Rightarrow Least number is 147 Ans.

10. (D) We know that $0 < x < \frac{\pi}{2}$
 $\Rightarrow \sec x = \operatorname{cosec} y$ [When $x = 45^\circ = y$]
 $\Rightarrow \tan\left(\frac{x+y}{2}\right) = \tan\left(\frac{90^\circ}{2}\right) = \tan 45^\circ = 1$



Ratio of Quantity 3 : 2

12. (B) A.T.Q.,
$$\text{Speed} = \frac{\text{distance}}{\text{time}}$$
Let x is speed of Boat and y is speed of current
Downstream speed $(x + y) = \frac{48}{6}$
 $= 8 \text{ km/h}$
 $x + y = 8$ (i)
Upstream speed $(x - y) = \frac{36}{6}$
 $= 6 \text{ km/h}$
 $x - y = 6$(ii)

After solving these equations and we get,
 $x = 7 \text{ km/h}$, $y = 1 \text{ km/h}$

13. (A) Relevant percentage of brand C's sales = 22%
 $\therefore 100\% = 360^\circ$
 $\therefore 22\% = \frac{360}{100} \times 22 = 79.2^\circ$

14. (B) Relevant Percentage of brand A, E and D's sales
 $= (16 + 20 + 24)\%$
 $= 60\%$
No. of shoes sold by A, E and D =
$$\frac{800 \times 60}{100} = 480$$

15. (D) Let Anil (A) Vivek (V) Tarun (T)
A.T.Q.,
 $A = V - x$...(i)
 $A = T + x$... (ii)
 $V = A + x$
 $T = A - x$
$$\frac{V + T = 2A}{A.T.Q.,}$$

 $V + T = 50$
 $2A = 50$
 $A = 25$
Age of Anil is 25 year

16. (D) For complementary Angle
 $2x + 17^\circ + x + 4^\circ = 90^\circ$
 $3x^\circ + 21^\circ = 90^\circ$
 $3x^\circ = 69^\circ$
 $x^\circ = 23^\circ$

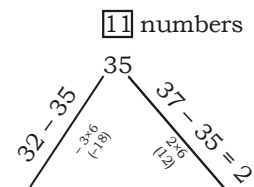
17. (C) We know that
 $PT^2 = PA \times PB$
 $(5)^2 = 4 \times PB$
 $PB = \frac{25}{4}$
 $AB = PB - PA$
 $= \frac{25}{4} - 4 = \frac{9}{4}$

18. (B) Work done by both pipes in one hour
 $= \frac{1}{4} - \frac{1}{16}$ unit
 $= \frac{4-1}{16}$ unit
 $= \frac{3}{16}$ unit

So, Leakage will be take $\frac{16}{3}$ hours

$\left(5\frac{1}{3}\right)$ hours

19. (C)



first 6 numbers 32 Last 6 numbers 37
Average of 6th number is $35 - 6 = 29$

20. (B) Let numbers are $7x$ & $8x$
LCM of $(7x \& 8x) = 392$
LCM of $7 \times 8 \times x = 392$
 $x = 7$
Numbers are 49, 56

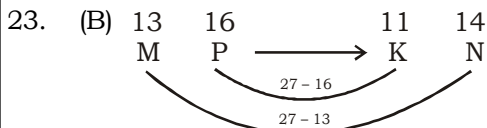
21. (C) Let total votes 100 units
Winner got 55% votes = $\frac{100 \times 55}{100}$
 $= 55$ unit
Loser voter got $\rightarrow 100 - 55$
 $= 45$ units votes
Winner got 10 units more votes
10 unit $\rightarrow 1500$
Total votes, 100 unit $\rightarrow 15000$ votes

22. (A) A.T.Q.,

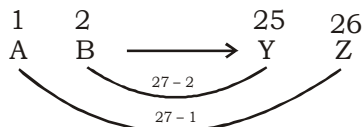
$$1 + \frac{2}{1 + \frac{3}{1 + \frac{4}{5}}}$$

$$\Rightarrow 1 + \frac{2}{1 + \frac{3}{9}} \Rightarrow 1 + \frac{2}{1 + \frac{15}{9}} \Rightarrow 1 + \frac{2}{\frac{24}{9}}$$

$$\Rightarrow 1 + 2 \times \frac{9}{24} = \frac{7}{4}$$

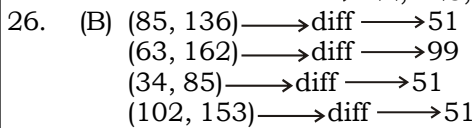
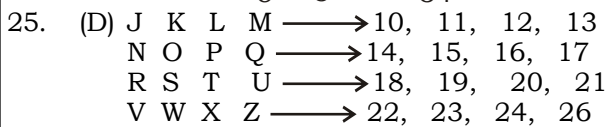


Similarly



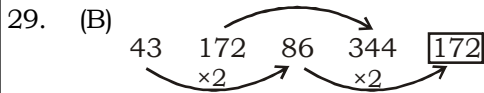
24. (A) $72 \rightarrow 7^2 + 2^2 \rightarrow 53$

$$53 \rightarrow 5^2 + 3^2 \rightarrow 34$$

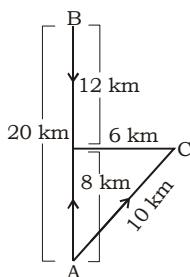


27. (C)

28. (D) **tsrstr/tsrstr/tsrstr**

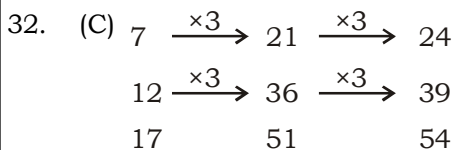


30. (C) Let Ramesh starts from point (A)



[North-East direction with reference to starting point (A)]

31. (D) Grand Mother

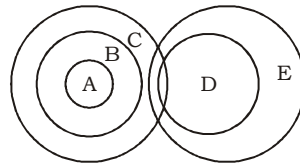


33. (B) $2 - 4 \div 48 \times 6 + 20$
After changing the signs as per the given details,
 $2 \times 4 + 48 \div 6 - 20$

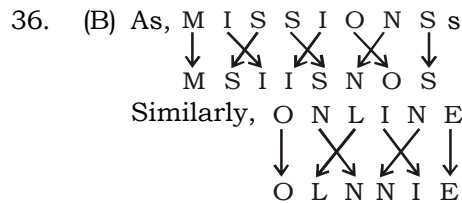
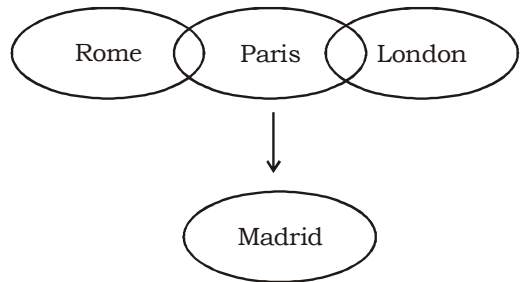
$$8 + 8 - 20$$

$$16 - 20 = -4$$

34. (D)



35. (A)



37. (C) Today is Tuesday.

38. (D)

39. (B)

40. (C)

RRB ALP - 15 (ANSWER KEY)

- | | | | |
|---------|---------|---------|---------|
| 1. (A) | 20. (B) | 39. (B) | 58. (A) |
| 2. (B) | 21. (C) | 40. (C) | 59. (D) |
| 3. (B) | 22. (A) | 41. (A) | 60. (D) |
| 4. (C) | 23. (B) | 42. (C) | 61. (B) |
| 5. (A) | 24. (A) | 43. (B) | 62. (D) |
| 6. (D) | 25. (D) | 44. (D) | 63. (B) |
| 7. (C) | 26. (B) | 45. (A) | 64. (D) |
| 8. (B) | 27. (C) | 46. (A) | 65. (C) |
| 9. (D) | 28. (D) | 47. (D) | 66. (A) |
| 10. (D) | 29. (B) | 48. (D) | 67. (B) |
| 11. (A) | 30. (C) | 49. (B) | 68. (A) |
| 12. (B) | 31. (D) | 50. (B) | 69. (A) |
| 13. (A) | 32. (C) | 51. (B) | 70. (A) |
| 14. (B) | 33. (B) | 52. (C) | 71. (C) |
| 15. (D) | 34. (D) | 53. (A) | 72. (A) |
| 16. (D) | 35. (A) | 54. (D) | 73. (B) |
| 17. (C) | 36. (B) | 55. (D) | 74. (C) |
| 18. (B) | 37. (C) | 56. (C) | 75. (A) |
| 19. (C) | 38. (D) | 57. (A) | |