1. (C)  \[ abcb \] \[ a/bc/abc/bcb \]
2. (B) Mountain has a height greater than that of a hill. Similarly, Ocean is a larger water body than that of a sea.
3. (A) \[ A \rightarrow Z \]
\[ B \rightarrow Y \]
\[ C \rightarrow X \]
Pairs of Opposite Letters
Therefore, \[ D \leftrightarrow E \leftrightarrow F \]
\[ W \leftrightarrow V \leftrightarrow U \]
4. (B) Cinema is an audio-visual means of entertainment. All others are printed materials.
5. (D)  
\[
\begin{array}{cccc}
Z & & & \\
\downarrow & C & B & A \\
\downarrow & F & E & D \\
\downarrow & I & H & G \\
W & L & K & J \\
\end{array}
\]
6. (D) Just right of K is J.
7. (D)  
\[
\begin{array}{cccc}
M & & & \\
I & J & K & \\
\downarrow & & & \\
L & & & \\
\end{array}
\]
8. (A)  
\[
\begin{array}{cccccccccccc}
I & 2 & 3 & 5 & 6 & 7 & 8 & 9 & 10 & 11 \\
H & O & S & I & T & A & L & I & T & Y \\
\end{array}
\]
Specified letters \[ \Rightarrow H, P, T, A \]
Meaningful word \[ \Rightarrow PATH \]
9. (A) Here rain is called swimming.
10. (C)  
\[
\begin{array}{cccc}
6 & & & \\
\downarrow & & & \\
5 \text{ km} & & & \\
\end{array}
\]
Starting point
\[
\begin{array}{cccc}
7 & & & \\
\downarrow & & & \\
6 \text{ km} & & & \\
\end{array}
\]
Required distance \[ = (5 + 7) \text{ km} = 12 \text{ km} \]
11. (D)  
\[
\begin{array}{cccc}
\text{Cat} & & & \\
\downarrow & \text{Books} & \text{Pens} & \\
\downarrow & & & \\
\end{array}
\]
I. True
II. True
12. (A)  
\[
\begin{array}{cccc}
\text{Rose} & & & \\
\downarrow & \text{Table} & \text{Earth} & \\
\downarrow & & & \\
\end{array}
\]
I. True
II. False
13. (C)  
\[
\begin{array}{cccc}
\text{Chair} & & & \\
\downarrow & \text{Car} & \text{Table} & \\
\downarrow & & & \\
\end{array}
\]
or
\[
\begin{array}{cccc}
\text{Chair} & & & \\
\downarrow & \text{Car} & \text{Table} & \\
\downarrow & & & \\
\end{array}
\]
I. Doubtful
II. Doubtful
14. (B) In first diagram, \[ 2^2 + 3^2 + 4^2 + 5^2 = 54 \]
In second diagram, \[ 13^2 + 3^2 + 8^2 + 11^2 = 363 \]
Similarly, \[ 12^2 + 7^2 + 9^2 + 15^2 = 499 \]
15. (B) The hands of a clock are at right angles twice in every hour but in 12 hours they are at right angles only 22 times. It is so because there are two positions common in every 12 hours, i.e., 30' clock and 90' clock.
16. (C) Possible triangles are:
\[ \triangle ABI, \triangle AID, \triangle BAD \]
\[ \triangle BCI, \triangle CID, \triangle BCD \]
\[ \triangle ABC, \triangle ACD, \triangle EGI, \triangle IEL, \triangle LIF \]
\[ \triangle FIK, \triangle KIG, \triangle IGM, \triangle IHN, \triangle IJM \]
\[ \triangle EIF, \triangle EIH, \triangle HIG, \triangle FIG, \]
\[ \triangle EFG, \triangle FHG, \triangle EGH, \triangle EHF \]
18. (B) Saturday + 3 = Tuesday
   The day before the day before yesterday will be Tuesday.
   So, today is Tuesday + 3 = Friday.
19. (C) 5 × 15 + 7 − 20 + 4 = 77
   ⇒ 5 × 15 + 7 − 20 + 4 = 77
   ⇒ 75 + 7 − 5 = 77
20. (D) Son of A is the brother of C and D. Therefore, B is the uncle of C.
    B may be son or daughter of A.
21. (B) First Row
    \[
    \begin{array}{c c}
    F + I & \Rightarrow O \\
    \downarrow & \downarrow \\
    6 + 9 & \Rightarrow 15
    \end{array}
    \]
   Second Row
    \[
    \begin{array}{c c}
    A + J & \Rightarrow K \\
    \downarrow & \downarrow \\
    1 + 10 & \Rightarrow 11
    \end{array}
    \]
   Third Row
    \[
    \begin{array}{c c}
    E + M & \Rightarrow R \\
    \downarrow & \downarrow \\
    5 + 13 & \Rightarrow 18
    \end{array}
    \]
22. (B)
   \[
   \begin{array}{c c c c c c c c c c}
   & & & & & & & & & & \\
   & & & & & & & & E & B & A \\
   & & & & & & & & D & 20 m & C \\
   & & & & & & & & 60 m & 20 m & 10 m \\
   \end{array}
   \]
23. (B) The year 2007 is an ordinary year. So, it has 1 odd day.
    1st day of the year 2007 was Monday.
    1st day of the year 2008 will be 1 day beyond Monday.
    Hence, it will be Tuesday.
24. (B) The required region should be common to only square and rectangle. Such region is marked ‘5’.
25. (A) In the given word, there are only one E and only one S. Hence, word RESPONSE cannot be formed. The word has no T. Hence, words REPENT and CORRECT cannot be formed.
26. (C) Sum of first \( n \) natural numbers
   \[
   S = \frac{n(n + 1)}{2}
   \]
   Here, \( n = 15 \)
   \[
   S = \frac{15 \times 16}{2} = 120
   \]
27. (A) HCF \times LCM = product of numbers
   \[
   xy = 3 \times 105 = 315
   \]
   \[
   x + y = 36
   \]
   \[
   \Rightarrow \frac{x + y}{xy} = \frac{1}{y} + \frac{1}{x} = \frac{36}{315} = \frac{4}{35}
   \]
28. (A) \( \frac{1}{-2} = -0.5; \)
   \[
   \Rightarrow \frac{1}{-2} = \frac{1}{4} = 0.25
   \]
   \[
   \Rightarrow \frac{1}{-2} < \frac{1}{(-2)^2}
   \]
29. (B) Let the amount of milk and water are \( 5x \) and \( 4x \) respectively.
   By question, \( \frac{5x}{x + 5} = \frac{5}{2} \)
   \[
   \Rightarrow 2x = x + 5 \Rightarrow x = 5
   \]
   \[
   \Rightarrow \text{amount of milk} = 5x = 5 \times 5 = 25 L
   \]
30. (A) Interest = 1200 - 800 = 400
    \[
    \Rightarrow S.I = \frac{P \times R \times T}{100}
    \]
    \[
    \Rightarrow 400 = \frac{800 \times R \times 10}{100}
    \]
    \[
    \Rightarrow R = 5\%
    \]
31. (A) Required value
    \[
    \Rightarrow 5,40,000 \left(1 - \frac{50}{3 \times 100}\right)^3
    \]
    \[
    \Rightarrow 5,40,000 \left(\frac{5}{6}\right)^3
    \]
    \[
    \Rightarrow \text{₹} 3,12,500
    \]
32. (D) Expression
    \[
    \Rightarrow \sqrt{3 + \sqrt{2 + \sqrt{8}\sqrt{7} + 4\sqrt{3}}}
    \]
    \[
    \Rightarrow \sqrt{\sqrt{3 + \sqrt{2 + \sqrt{8}\sqrt{4} + 3} + 2 \times 2\sqrt{3}}}
    \]
$$= \sqrt{3 + 2 + 8(2 + \sqrt{3})}$$

$$= \sqrt{3 + 2 + \sqrt{16 + 8\sqrt{3}}}$$

$$= \sqrt{3 + 2 + 12 + 4 + 2 \times 2 \times 2\sqrt{3}}$$

$$= \sqrt{\sqrt{3} + 2 + (2 + 2\sqrt{3})}$$

$$= \sqrt{\sqrt{3} + 4 + 2\sqrt{3}}$$

$$= \sqrt{\sqrt{3} + \sqrt{3} + 1 + 2 \times \sqrt{3}}$$

$$= \sqrt{\sqrt{3} + \sqrt{3} + 1} = 1$$

33. (C) Total distance travelled

$$= 50 \times 2.5 + 70 \times 1.5$$

$$= (125 + 105) \text{ km} = 230 \text{ km}$$

34. (D) Required increase

$$= \left(30 + 30 \times \frac{30 \times 30}{100}\right)\%$$

$$= 69\%$$

35. (B) Part of the tank filled by both pipes in 1 minute.

$$= \frac{1}{20} + \frac{1}{30} = \frac{3+2}{60} = \frac{1}{12}$$

Hence, the tank will be filled in 12 minutes.

36. (B)

37. (D) Ratio of sides = \(\frac{1}{2} : \frac{1}{3} : \frac{1}{4}\)

$$= \frac{1}{2} \times 12 : \frac{1}{3} \times 12 : \frac{1}{4} \times 12$$

$$= 6 : 4 : 3$$

∴ The smallest side

$$= \frac{3}{6+4+3} \times 52$$

$$= \frac{3}{13} \times 52 = 12 \text{ cm}$$

38. (C) From the given alternatives,

$$26 + 1 = 27; 35 + 1 = 36$$

∴ \(\frac{27}{36} = \frac{3}{4}\)

Again, \(26 - 5 = 21; 35 - 5 = 30\)

∴ \(\frac{21}{30} = \frac{7}{10}\)

39. (C) Let the numbers be \(a\) and \(b\).

Then, \(a + b = 55\) and \(ab = 5 \times 120 = 600\).

The required sum = \(\frac{1}{a} + \frac{1}{b} = \frac{a+b}{ab}\)

$$= \frac{55}{600} = \frac{11}{120}$$

40. (B) S.P = \(\frac{60}{85} \times 100 \times \frac{102}{100} = \text{ ₹} 72\)

41. (D) Let listed Price = 100

Total discounted price after successive discounts of 25%, 30% & 40%

$$= 100 \times \frac{100-25}{100} \times \frac{100-30}{100} \times \frac{100-40}{100}$$

$$= 100 \times \frac{75}{100} \times \frac{70}{100} \times \frac{60}{100}$$

$$= \frac{3150}{100} = 31.50$$

Single equivalent discount 100 - 31.50 = 68.50%

42. (D) The pattern is:

\[5 \times 2 - 2 = 10 - 2 = 8\]
\[8 \times 2 - 2 = 16 - 2 = 14\]
\[14 \times 2 - 2 = 28 - 2 = 26\]
\[26 \times 2 - 2 = 52 - 2 = 50\]
\[50 \times 2 - 2 = 100 - 2 = 98\]

43. (A) \(3^2 + 4^2 = 5^2\)

It is a right angle triangle.

44. (A) \(\frac{m}{n} = \frac{12}{10} = \frac{6}{5}\)

\[\Rightarrow \frac{m^2}{n^2} = \left(\frac{6}{5}\right)^2 = \frac{36}{25}\]

\[\therefore \frac{m^2+n^2}{m^2-n^2} = \frac{\frac{m^2}{n^2}+1}{\frac{m^2}{n^2}-1}\]

(On dividing numerator and denominator by \(n^2\))

$$= \frac{\frac{36}{25}+1}{\frac{36}{25}-1} = \frac{36+25}{36-25} = \frac{61}{11} = \frac{5}{11}$$
45. (B) Here, first divisor (56) is a multiple of second divisor (8).
∴ Required remainder = Remainder obtained on dividing 29 by 8 = 5

46. (B) Let speed of boat in still water = \( x \) km/h. and speed of current = \( y \) km/h.

By question,
\[
\frac{24}{(x + y) km/h} = 10
\]
\[
\therefore x + y = \frac{24}{10} = 2.4 \quad \text{...(1)}
\]

\[
\frac{24}{(x - y) km/h} = 12h
\]
\[
x - y = \frac{24}{12} = 2 \quad \text{...(2)}
\]

Adding from equation (1) and (2)
\[
x + y = 2.4
\]
\[
x - y = 2
\]
\[
2x = 4.4
\]
\[
\Rightarrow x = 2.2 \text{ km/h}
\]

47. (B) \( \therefore \) 16 Men cut in 30 days
\( \therefore \) 1 men cut in \( 30 \times 16 \) days
\( \therefore \) 20 men cut in \( \frac{30 \times 16}{20} \)
\( = 24 \) days

48. (D) Required number of employees who participated in both Engineering and Industries professions = \( 26800 \times \frac{9 + 13}{100} \)
\( = 268 \times 22 = 5896 \)

49. (A) Total number of employees in Management profession = \( 26800 \times \frac{17}{100} \)
\( = 4556 \)
Number of female employees in Management profession = \( 4556 \times \frac{3}{4} \)
\( = 3417 \)
∴ Required number of male employees in Management profession = 4556 – 3417 = 1139

50. (C) Number of employees in Teaching profession = \( 26800 \times \frac{15}{100} \)
\( = 4020 \)
Number of employees in Medical profession
\( = 26800 \times \frac{27}{100} \)
\( = 7236 \)
Total number of employees = 4020 + 7336 = 11256
Number of employees in Management profession = \( 26800 \times \frac{17}{100} \)
\( = 4556 \)
∴ Reqd difference = 11256 – 4556 = 6700
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. | (C) | 26. | (C) | 51. | (A) | 76. | (C) |
| 2. | (B) | 27. | (A) | 52. | (B) | 77. | (B) |
| 3. | (A) | 28. | (A) | 53. | (A) | 78. | (A) |
| 4. | (B) | 29. | (B) | 54. | (A) | 79. | (C) |
| 5. | (D) | 30. | (A) | 55. | (C) | 80. | (C) |
| 6. | (D) | 31. | (A) | 56. | (A) | 81. | (D) |
| 7. | (D) | 32. | (D) | 57. | (C) | 82. | (B) |
| 8. | (A) | 33. | (C) | 58. | (A) | 83. | (D) |
| 9. | (A) | 34. | (D) | 59. | (B) | 84. | (C) |
| 10. | (C) | 35. | (B) | 60. | (A) | 85. | (C) |
| 11. | (D) | 36. | (B) | 61. | (D) | 86. | (D) |
| 12. | (A) | 37. | (D) | 62. | (A) | 87. | (C) |
| 13. | (C) | 38. | (C) | 63. | (B) | 88. | (C) |
| 14. | (B) | 39. | (C) | 64. | (D) | 89. | (B) |
| 15. | (B) | 40. | (B) | 65. | (D) | 90. | (B) |
| 16. | (C) | 41. | (D) | 66. | (A) | 91. | (A) |
| 17. | (A) | 42. | (D) | 67. | (C) | 92. | (A) |
| 18. | (B) | 43. | (A) | 68. | (A) | 93. | (A) |
| 19. | (C) | 44. | (A) | 69. | (A) | 94. | (B) |
| 20. | (D) | 45. | (B) | 70. | (B) | 95. | (B) |
| 21. | (B) | 46. | (B) | 71. | (C) | 96. | (D) |
| 22. | (B) | 47. | (B) | 72. | (B) | 97. | (A) |
| 23. | (B) | 48. | (D) | 73. | (C) | 98. | (A) |
| 24. | (B) | 49. | (A) | 74. | (B) | 99. | (B) |
| 25. | (A) | 50. | (C) | 75. | (C) | 100. | (B) |