Solutions

Chapter – 1
(Number and Letter Series)
Exercise – 1

Solutions for questions 1 to 34:

1. 14^{+3}, 17^{+3}, 20^{+3}, $\underline{23}^{+3}$, 26^{+3}, 29
20 + 3 = 23 Choice (C)

2. 5^{+6}, 11^{+6}, 17^{+6}, 23^{+6}, $\underline{29}^{+6}$, 35
23 + 6 = 29 Choice (B)

3. 48^{-5}, 43^{-4}, 39^{-3}, $\underline{36}^{-2}$, 34^{-1}, 33
39 – 3 = 36 Choice (D)

4. 6^{+2}, 8^{+4}, 12^{+6}, 18^{+8}, 26^{+10}, $\underline{36}$
26 + 10 = 36 (Consecutive even numbers are added)
Choice (A)

5. 63^{+3}, 66^{+5}, 71^{+7}, 78^{+9}, 87^{+11}, $\underline{98}$
87 + 11 = 98 (Consecutive Odd numbers are added)
Choice (B)

6. 43^{+1}, 44^{+4}, 48^{+9}, 57^{+16}, 73^{+25}, $\underline{98}$
Consecutive squares are added
75 + 25 = 98 Choice (D)

7. 4, 49, 144, 289, _____
This can be written as $(2)^2$, $(7)^2$, $(12)^2$, $(17)^2$, _____
2 + 5 = 7, 7 + 5 = 12 and 17 + 5 = 22 and $(22)^2 = 484$ Choice (D)

8. 4, 8, 12, 7, 11, 18, 9, _____, 22
4 + 8 = 12; 7 + 11 = 18
Similarly, 9 + 13 = 22 Choice (C)

9. 2, 4, 8, 3, 9, 27, 5, 25, 125, ___, ___, ___
(2), $(2)^2$, $(2)^3$, (3), $(3)^2$, $(3)^3$, (5), $(5)^2$, $(5)^3$, ___, ___, ___
2, 3, 5 are consecutive primes and the prime number after 5 is 7.
7, $(7)^2$, $(7)^3 = 7, 49, 343$ Choice (D)

10. $4^{\times 4}$, $16^{\times 4}$, $64^{\times 4}$, $256^{\times 4}$, _____ $^{\times 4}$, 4096
Each number is multiplied by 4 to get the next term in the series. $256 \times 4 = 1024$ Choice (A)

11. $7^{\times 3}$, 21^{+1}, $22^{\times 3}$, 66^{+1}, $67^{\times 3}$, ___, 202
$67 \times 3 = 201$ Choice (D)

12. 49, 1625, 3649, 6481, _____
The above series can be written as
$2^2\ 3^2$, $4^2\ 5^2$, $6^2\ 7^2$, $8^2\ 9^2$, $\underline{10^2\ 11^2}$
$10^2 = 100$ and $11^2 = 121$
100121 Choice (C)

13. $\frac{2}{3}, \frac{3}{9}, \frac{4}{16}, \frac{5}{25}$, _____
The number given in the numerator and the square of its number is given in the denominator.
Next number is $\frac{6}{36}$ Choice (B)

14. $3^{\times 1}$, $3^{\times 2}$, $6^{\times 3}$, $18^{\times 4}$, $72^{\times 5}$, $360^{\times 6}$, _____
The given numbers are multiplied with successive natural numbers in the increasing order.
$360 \times 6 = 2160$ Choice (A)

15. $8^{\times 5}$, $40^{\div 2}$, $20^{\times 5}$, $100^{\div 2}$, $50^{\times 5}$, $\underline{250}^{\div 2}$, 125
$50 \times 5 = 250$ Choice (B)

16. 43, 47, 53, 59, 61, _____
The series consists of successive prime numbers. The prime number after 61 is 67. Choice (D)

17. 67, 71, 73, 79, 83, ____, ____
The series consists of successive prime numbers. The prime numbers after 83 are 89 and 97. Choice (C)

18. 47^{+4}, 51^{+6}, 57^{+8}, 65^{+10}, _____ $^{+12}$, 87
Successive even numbers are added to generate the series. 65 + 10 = 75 Choice (D)

19. 113^{+23}, 136^{+25}, 161^{+27}, 188^{+29}, $\underline{217}^{+31}$, 248
Successive odd numbers starting from 23 are added to generate series. 188 + 29 = 217 Choice (D)

20. 13, 221, 17, 19, 437, 23, 23, _____, 29
$13 \times 17 = 221$; $19 \times 23 = 437$
Similarly, $23 \times 29 = 667$ Choice (B)

21. 24, 30, 36, 42, 52, 60, _____
Sum of the consecutive prime numbers are given.
11 + 13 = 24; 13 + 17 = 30; 17 + 19 = 36 and so on.
So, 31 + 37 = 68 Choice (D)

22. 64, 216, 512, 1000, 1728, _____
This can be written as
$(4)^3$, $(6)^3$, $(8)^3$, $(10)^3$, $(12)^3$, $\underline{(14)^3}$
$(14)^3 = 2744$ Choice (D)

23. 2, 8, 4, 64, 7, 343, 11, 1331, 16, _____
This can be written as
2, 2^3, 4, 4^3, 7, 7^3, 11, 11^3, 16, $\underline{16^3}$
$(16)^3 = 4096$ Choice (C)

24. 1, 8, 9, 64, 25, 216, 49, _____
This can be written as
1^2, 2^3, 3^2, 4^3, 5^2, 6^3, 7^2, $\underline{8^3}$
$(8)^3 = 512$ Choice (C)

25. 1728^{-343}, 1385^{-216}, 1169^{-125}, 1044^{-64}, 980^{-27}, _____
$343 = 7^3$; $216 = 6^3$; $125 = 5^3$ and so on
980 – 27 = 953 Choice (D)

26. $17^{\times 2}$, $34^{\times 3}$, $102^{\times 4}$, $408^{\times 5}$, $2040^{\times 6}$, ____
$2040 \times 6 = 12240$ Choice (B)

27. 12, 14, 18, 26, 38, 62, _____
The product of the digits in each number is added to the number to get the next number in the series.
$12 \Rightarrow 1 \times 2 = 2$ and 12 + 2 = 14
$14 \Rightarrow 1 \times 4 = 4$ and 14 + 4 = 18 and so on.
Similarly, $62 \Rightarrow 6 \times 2 = 12$ and 62 + 12 = 74
Choice (C)

28. 12, 36, 150, 392, 1452, _____
The given series can be written as
$(2)^3 + (2)^2$, $(3)^3 + (3)^2$, $(5)^3 + (5)^2$, $(7)^3 + (7)^2$,
$(11)^3 + (11)^2$, $\underline{(13)^3 + (13)^2}$
$(13)^3 + (13)^2 = 2197 + 169 = 2366$ Choice (D)

29. $13^{\times 4-1}$, $51^{\times 4-1}$, $203^{\times 4-1}$, $811^{\times 4-1}$, $3243^{\times 4-1}$, _____
$3243 \times 4 - 1 \Rightarrow 12972 - 1 = 12971$ Choice (B)

30. 49, 925, 2549, _____, 121169
This can be written as
$2^2\ 3^2$, $3^2\ 5^2$, $5^2\ 7^2$, $\underline{7^2\ 11^2}$, $11^2\ 13^2$
Squares of successive prime numbers are given
$7^2\ 11^2 \Rightarrow 49121$ Choice (D)

31. The logic is x2-1, x2-2, x2-3….
The next element in the series is 199 Choice (B)

32. If the missing element is 48, then the difference between each element becomes, 28, 24 and 20. Hence the missing element is 48. Choice (D)

33. The logic is x1+1, x2+2, x3+3… The next element in the series is 184. Choice (D)

34. x.5, x 1, x1.5, x2…. The next element in the series is 15. Choice (C)

Solutions for questions 35 to 39:

35. The given series is
$8^{\times 2}$, $16^{\times 2}$, $32^{\times 2}$, $64^{\times 2}$, $\underline{128}^{\times 2}$, 256
Hence, 120 is the wrong number. Choice (B)

36. The given series is
8^{+31}, 39^{+37}, 76^{+41}, $\underline{117}^{+43}$, 160^{+47}, 207
Prime numbers are added in the increasing order.
Hence, 120 is the wrong number. Choice (D)

37. The given series is the series of consecutive squares.
81, 100, 121, 144, $\underline{169}$, 196
9^2, 10^2, 11^2, 12^2, 13^2, 14^2
Hence, 170 is the wrong number. Choice (A)

38. The given series is Fibonacci series
8, 9^{+8}, 17^{+9}, 26^{+17}, 43^{+26}, 69^{+43}, $\underline{112}$
Hence, 113 is the wrong number. Choice (D)

39. The given series is
$3^{\times 1}$, $3^{\times 2}$, $6^{\times 3}$, $18^{\times 4}$, $72^{\times 5}$, $\underline{360}^{\times 6}$, 2160
Hence, 380 is the wrong number. Choice (D)

Solutions for questions 40 to 44:

40. The given series is
200^{+9}, 209^{+25}, 234^{+49}, 283^{+81}, 364^{+121}, 485
The differences are squares of consecutive odd numbers; the required series is
9^{+9}, 18^{+25}, 43^{+49}, 92^{+81}, 173^{+121}, 294
(a) (b) (c) (d) (e)
Hence (d) = 173. Choice (B)

41. The given series is
$4^{\times 3+2}$, $14^{\times 2+3}$, $31^{\times 3+2}$, $95^{\times 2+3}$, $193^{\times 3+2}$, $581^{\times 2+3}$, 1165
The required series is
$2^{\times 3+2}$, $8^{\times 2+3}$, $19^{\times 3+2}$, $59^{\times 2+3}$, $121^{\times 3+2}$, 365
(a) (b) (c) (d) (e)
Hence, (e) = 365. Choice (C)

42. The given series is
4^{+1}, $5^{\times 2}$, 10^{+3}, $13^{\times 4}$, 52^{+5}, $57^{\times 6}$, 342
The required series is
10^{+1}, $11^{\times 2}$, 22^{+3}, $25^{\times 4}$, 100^{+5}, 105
(a) (b) (c) (d) (e)
Hence, (b) = 22. Choice (B)

43. The given series is
353^{-37}, 316^{-41}, 275^{-43}, 232^{-47}, 185^{-53}, 132
The differences are consecutive prime numbers
The required series is
100^{-37}, 63^{-41}, 22^{-43}, -21^{-47}
(a) (b) (c)
Hence, (c) = –21. Choice (D)

44. The given series is
$10^{\times 1+2}$, $12^{\times 2+3}$, $27^{\times 3+5}$, $86^{\times 4+7}$, $351^{\times 4+7}$, $351^{\times 5+11}$, 1766
The required series is
$12^{\times 1+2}$, $14^{\times 2+3}$, $31^{\times 3+5}$
(a) (b)
Hence, (b) = 31. Choice (B)

Solutions for questions 45 to 51:

45. 99 = (8 + 3) (4 + 5),
80 = (7 + 3) (6 + 2),
105 = (11 + 4) (3 + x)
$\Rightarrow$ x = 4.
and
A^{+3} D^{+3} G^{+3} J, C^{+3} F^{+3} I^{+3} L, in the same way H^{+3} $\underline{K}^{+3}$ N^{+3} Q.
$\therefore$ 4, K. Choice (B)

46. The given logic is :
(8 + 5) $\times$ (5 + 2) = 91, (6 + 8) $\times$ (3 + 2) = 70, in the same way (9 + 2) $\times$ (3 + 4) = 77.
and
D^{+2} F^{+4} J^{+6} P, C^{+2} E^{+4} I^{+6} O, is the same way R^{+2} $\underline{T}^{+4}$ X^{+6} B.
$\therefore$ 77, T. Choice (B)

47. 9 = 7 + 8 – 6,
10 = 13 + 8 – 5,
Similarly = 10 + 15 – 2 = 23.
P^{+3} S^{+3} V^{+3} Y^{+3} B^{+3} E, B^{+3} E^{+3} H^{+3} K^{+3} $\underline{N}^{+3}$ Q. Choice (D)

48. The given logic is:

10	12	15	20	27	38	51	68
	+2	+3	+5	+7	+11	+13	+17

and
The given alphabets are consecutive vowels. Hence the missing letter is $\underline{O}$.
$\therefore$ 68, O. Choice (C)

49. $16 = 5^2 - 3^2$
$33 = 7^2 - 4^2$
$28 = 8^2 - 6^2$
Similarly, $x^2 - 5^2 = 56$
$\Rightarrow x^2 = 81 \Rightarrow x = 9$.
and
B^{+2} D^{+3} G^{+4} K^{+5} P^{+6} V^{+7} C^{+8} $\underline{K}$.
$\therefore$ 9, K. Choice (A)

50. The left bottom is obtained by adding the product of the top row and the right bottom elements. Choice (D)

51. The tens and hundreds digit of the center element is the sum of all the other elements, while the units digit is 3. Choice (C)

Solutions for questions 52 to 50:

52. Row (1) is 33 11 4
Resultant of 33 11 = $\frac{33}{11}$ = 3 (from rule (4))
Resultant of 3 4 = 3 + 4 = 7 = x (from rule (5))
Row (2) is 14 7 16
Resultant of 14 7 = $\frac{14}{7}$ = 2 (from rule (4))
Resultant of 2 16 = 2 $\times$ 16 = 32 (from rule (3))
Hence, resultant of row 2 is 32.
Choice (A)

53. Row (1) is 22 9 15
Resultant of 22 9 = 22 × 9 = 198 (from rule (3))
Resultant of 198 = 198 – 15 = 28 (from rule (2))
Row (2) is 12 25 7
Resultant of 12 25 = 12 $\times$ 25 = 300 (from rule (3))
Resultant of 300 5= $\frac{300}{5}$ = 60 (from rule (4))
Resultant of row 2 = 60
Hence, the sum of the resultants of row (1) and row (2) is 183 + 60 = 243. Choice (B)

54. Row (1) is 24 15 33
Resultant of 24 15 = 24 – 15 = 9 (Form rule (2))
Resultant of 9 33 = 9 + 33 = 42 (from rule (1))
Row (2) is 42 9 4
Resultant of 42 9 = 42 $\times$ 9 = 378 (from rule (3))
Resultant of 378 = 378 $\times$ 4 = 1512 (from the rule (3))
Hence, the resultant of row (2) is 1512
Choice (D)

55. Row (1) is 2 25 1
Resultant of 2 25 = 2 $\times$ 25 = 50 (Form rule (3))
Resultant of 50 1 = 50 × 1 = 50 (from rule (3))
Resultant of row (1) is 50.
Row (2) is 2 16 4
Resultant of 2 16 = 2 $\times$ 16 = 32 (from rule (3))
Resultant of 32 4 = 32 × 4 = 128 (from the rule (3))
$\therefore$ Resultant of row (2) = 128.
Hence, the difference between the resultants of row (1) and row (2) = 128 – 50 = 78. Choice (A)

56. Row (1) is 29 24 15
Resultant of 29 24 = 29 + 24 = 53 (Form rule (5))
Resultant of 53 15 = 53 + 15 = 68 (from rule (1))
Resultant of Row (1) = 68
Row (2) is 6 9 2
Resultant of 6 9 = 6 × 9 = 54 (from rule (3))
Resultant of 54 2 = $\frac{54}{2}$ = 27 (from the rule (4))
Hence, resultant of row (2) = 27.
Hence, the resultant of row (1) is 41 (= 68 – 27) greater than the resultant of row (2). Choice (A)

57. The place value of the alphabet are:
5, 6, 7, 9, 12. The difference is 1, 1, 2, 3. This is a Fibonacci series. Hence the next difference will be 2 + 3 = 5. Therefore, the next element will be 17th I.e., Q.
Choice (C)

Solutions for questions 58 to 70:

58. The three letters in each group make three different series.
$F^{+6} = L^{+6} = R^{+6} = X^{+6} = \underline{D}$
$T^{-5} = O^{-5} = J^{-5} = E^{-5} = \underline{Z}$
$J^{+4} = N^{+4} = R^{+4} = V^{+4} = \underline{Z}$
So, 'DZZ' is the next group in the series. Choice (B)

59. The three letters in each group constitute three different series as follows.
$P^{-2} = N^{-2} = L^{-2} = J^{-2} = H$
$L^{+2} = N^{+2} = P^{+2} = R^{+2} = T$
$J^{-2} = H^{-2} = F^{-2} = D^{-2} = B$
So, the next group, in the series is 'HTB'. Choice (C)

60. Consider the corresponding letters in each of the given set of letters.
The first letters are consecutive vowels.
A, E, I, O, U
C^{+3}, F^{+3}, $\underline{I^{+3}}$, L^{+3}, O
D^{+4}, H^{+4}, $\underline{L^{+4}}$, P^{+4}, T
Hence the missing letters are IIL. Choice (B)

61. Consider the corresponding letters in each of the given set of letters.
A^{X2}, B^{X2}, $\underline{D^{X2}}$, H^{X2}, P
J^{+2}, L^{+2}, $\underline{N^{+2}}$, P^{+2}, R
X^{-3}, U^{-3}, $\underline{R^{-3}}$, O^{-3}, L
Hence the missing letters are DNR. Choice (D)

62. Consider the corresponding letters in each of the given set of letters.
C^{+2}, E^{+3}, H^{+5}, $\underline{M^{+7}}$, T^{+11}, E
D^{+2}, F^{+3}, I^{+5}, $\underline{N^{+7}}$, U^{+11}, F
F^{+2}, H^{+3}, K^{+5}, $\underline{P^{+7}}$, W^{+11}, H
Hence the missing letters are MNP. Choice (A)

63. Consider the corresponding letters in each of the given set of letters.
B^{+1}, C^{+1}, D^{+1}, E^{+1}, $\underline{F}$
D^{-2}, B^{-2}, Z^{-2}, X^{-2}, $\underline{V}$
F^{+3}, I^{+3}, L^{+3}, O^{+3}, $\underline{R}$
H^{-4}, D^{-4}, Z^{-4}, V^{-4}, $\underline{R}$
Hence the missing letters are FVRR. Choice (C)

64. Consider the corresponding letters in each of the given set of letters.
A^{+1}, B^{+2}, D^{+3}, G^{+4}, $\underline{K}$
C^{+2}, E^{+3}, H^{+4}, L^{+5}, $\underline{Q}$
D^{+3}, G^{+4}, K^{+5}, P^{+6}, $\underline{V}$
B^{+4}, F^{+5}, K^{+6}, Q^{+7}, $\underline{X}$
Hence the missing letters are KQVX. Choice (B)

65. Consider the corresponding letters in each of the given set of letters.
A = 1 and B = 2 $\Rightarrow$ 1 + 2 = 3
C = 3 and E = 5 $\Rightarrow$ 3 + 5 = 8
G = 7 and K = 11 $\Rightarrow$ 7 + 11= 18
I = 9 and N = 14 $\Rightarrow$ 9 + 14 = 23
K = 11 and Q = 17 $\Rightarrow$ 11 + 17 = 28
Only E13H follows this pattern. Choice (B)

66. 1 L 2 $\Rightarrow$ 12 and the 12th letter is L.
1 Q 7 $\Rightarrow$ 17 and the 17th letter is Q.
Similarly, 2 V 2 is 22 and the 22nd letter is V.
Choice (B)

67. 4 B 2 $\Rightarrow$ 4 – 2 = 2, and the 2nd letter is B,
8 G 1 $\Rightarrow$ 8 – 1 = 7, and the 7th letter is G.
Similarly, 6 C 3 $\Rightarrow$ 6 – 3 = 3, and the 3rd letter is C.
Choice (C)

68. In the series, the first half is the letter and its place value in alphabetical order, while the second half is the letter and its place value in reverse alphabetical order.
The next element in the series is M13W23. Choice (C)

69. In the series, the first half is the letter and its place value in alternate alphabetical order, while the second half is the letter and its place value in the alternate reverse alphabetical order.
The next element in the series is L12P16. Choice (A)

70. Each element is made of two adjacent letters and their place values. The series is:
AB, CD, EF,
The next element in the series is H8I9. Choice (B)

Chapter – 2
(Coding and Decoding)

Exercise – 2

Solutions for questions 1 to 25:

1. In this, alternate letters starting from the first are written followed by the remaining letters.
So, SIGNIFICANT is written as SGIIATINFCN.
Choice (B)

2. Word : G R O W T H
Logic 1 : The word is reversed
H T W O R G
Logic 2 : +1 + 1 +1 +1 + 1 +1
Code : I U X P S H
Similarly, AVERAGE is coded as FHBSFWB.
Choice (B)

3. Word : A R R I V E D
Logic : The word is reversed.
Code : D E V I R R A
Similarly, PETROLEUM is coded as MUELORTEP.
Choice (D)

4. Word : S E C T O R
Logic : The word is divided into two halves and each half is reversed.
Code : C E S R O T
Similarly, OPPOSITION is coded as SOPPONOITI.
Choice (A)

5. Word : C O N C E P T
Logic : +1 +2 +3 +4 +5 +6 +7
Code : D Q Q G J V A
Similarly, EXECUTION is coded as FZHGZZPWW.
Choice (D)

6. Word : A D D R E S S
Logic : –1 –1 –1 –1 –1 –1 –1
Code : Z C C Q D R R
Similarly, BUILDING is coded as ATHKCHMF.
Choice (A)

7. Word : E N E R G Y
Logic : –2 –2 –2 –2 –2 –2
Code : C L C P E W
Similarly, FORTUNE is coded as DMPRSLC.
Choice (D)

8. Word : R E S I D E N T
Logic : –2 –2 –2 –2 –2 –2 –2 –2
Code : P C Q G B C L R
Similarly, VILLAGE is coded as TGJJYEC.
Choice (A)

9. Word : M E A S U R E
Logic : –1 +1 –1 +1 –1 +1 –1
Code : L F Z T T S D
Similarly, OCCASION is coded as NDBBRJNO.
Choice (C)

10. Word : P U B L I C
Logic : +3 +3 +3 –3 –3 –3
Code : S X E I F Z
Similarly, NUMBER is coded as QXPYBO.
Choice (A)

11. In this, the place-values of the letters in the word as per the alphabet are given as the code. CHEER is coded as 385518
WATER is coded as 23120518
Similarly, EXPRESS is coded as 524161851919.
Choice (B)

12. Given that in a certain code language, A is represented by 1, B by 2, C by 3, all the multiples of 2 are given a code of 2, the multiples of 3 are given a code of 3. In case of a clash 2 will prevail, and the rest of the letters in the alphabet are given a code of 4. Hence, VOWEL ⇒ V = 22 and is coded as 2
O = 15 and is coded as 3
W = 23 and is coded as 4
E = 5 and is coded as 4
L = 12 and is coded as 2. Choice (C)

13. The words and their codes are as follows
ENERGY - 786374
REAP - 1073
We can get the code for the letters E, R only.
From this we cannot determine the code for GREEN.
Choice (D)

14. Number of letters in the word INVADER = 7 and 7 × 6 = 42, Number of letters in the word SECURE = 6 and 6 × 5 = 30
Similarly, SITUATION
⇒ 9 × 8 = 72. Choice (D)

15. The number of letters in each word is multiplied with 10 to get the code value
i.e., PIONEER ⇒ 7 × 10 = 70
BRAND ⇒ 5 × 10 = 50
Similarly, TECHNOLOGY ⇒ 10 × 10 = 100.
Choice (C)

16. In this, product of the digits in the place-values of the letters as per the alphabet is obtained first and then added i.e., CUSTOM
⇒ C = 3
U = 21 ⇒ 2 × 1 = 2
S = 19 ⇒ 1 × 9 = 9
T = 20 ⇒ 2 × 0 = 0
O = 15 ⇒ 1 × 5 = 5
M = 13 ⇒ 1 × 3 = 3
Now (3 + 2 + 9 + 0 + 5 + 3) = 22
So, CUSTOM = 22
Similarly, HISTORY = 49. Choice (B)

17. The number of letters in each word is multiplied with 3 to get the value i.e., CONSUMER ⇒ 8 x 3 = 24 and DETERGENT ⇒ 9 x 3 = 27
Similarly, EXPLORATION ⇒ 11 X 3 = 33. Choice (D)

18. Each letter is replaced by its place value. In the same way, HIT is coded as 8920. Choice (B)

19. Each letter is replaced by its place value. In the same way, JON is coded as 101514. Choice (D)

20. Each letter is replaced by (6 x PV) + 1. In the same way, DROWN is coded as 25 109 91 139 85. Choice (C)

21. Consider February : Place value of F is 6 and Y is 25. February is 2nd month. Hence, it is coded as 06225.
Similarly, March is coded as 13308. In this way, MAY is coded as 13525. Choice (A)

22. Look at the common letters between CRITICAL and TRIM. As C and I are repeated in critical, they must be 3 or 5. From TRIM, I is 5. T and R should be 1 and 2 in any order. That leaves M for 8. A and L as 6 and 7. Therefore, the code for MALI is 5867. Choice (A)

23. INDIA/CANADA ➔ Number of vowels in INDIA / Number of vowels in CANADA.
Similarly, RUSSIA/JAPAN = 3/2 = 1.5 Choice (B)

24. The place values of JEANS is 10 5 1 14 19. Place values of LCCLU is 12 3 3 12 19. The logic is +2 -2 +2 -2 +2.
In this way, SHIRT 19 8 9 18 20 becomes 21 6 11 16 22 i.e., UFKPV. Choice (D)

25. The place values of the letters of the word ALTERNATE are 1 12 20 5 18 14 1 20 5. While the place values of BKVDUMDSJ are 2 11 22 4 21 13 4 19 10. The logic is +1 -1 +2 -1 +3 -1 +4 -1
In the same way, the place values of the word CONFUSED is 3 15 14 6 21 19 5 4. This is changed to 4 14 16 5 24 18 9 3 i.e., DNPEXRIC. Choice (B)

Solutions for questions 26 to 30:

From (i) and (ii), only the word 'Diamond' is common and in codes only 'z' is common. Hence, the code for 'Diamond' is 'z'.
Similarly from (i) and (iii) the word 'Bag' is common and in codes 'ϕ' is common. Hence, the code for 'bag' is 'ϕ'. Similarly, from (ii) and (iv), and (iii) and (iv) we can find the codes for 'exported' and 'Black' respectively. Now from (i), only the code for 'in' is remaining.
∴ Code for 'in' is x.
Similarly we can find the codes for 'are', 'was' and 'is'. The words and their respective codes are as follow.

Word	diamond	bag	black	exported	was	is	are	in
Code	z	ϕ	+	*	%	f		x

26. The code for 'Diamond' is 'z'. Choice (D)

27. The code for 'Diamond is Black' is 'z f +'. Choice (B)

28. 'Bag exported' is coded as ϕ *. Choice (C)

29. The code for 'exported' is '*'. Choice (A)

30. The code for was is '%'. Choice (A)

Solutions for questions 31 to 35:

31. The given group of elements is 4 @ 8 × ≠ 7. The group follows condition (iv).
Hence, the code is N T B F B P. Choice (C)

32. The given group of elements is 5 θ $ 2 9 ≠. This group follows condition (iii).
Hence, the code is P Z M D P J. Choice (B)

33. The given group of elements is ϕ $ 3 @ 9 ! 5. This group follows condition (i).
Hence, the code is C M A M E M H. Choice (C)

34. The given group of elements is ≠ 4 8 2 6 9 $.
This group follows condition (ii).
Hence, the code is J M B D I E P Choice (A)

35. The given group of element is 3 $ ϕ 1 7 3.
This group follows condition (iii).
Hence, the code is P M C O P A. Choice (D)

Solutions for questions 36 to 40:

36. The given group of elements is % 9 5 ∀ Δ 4. This group follows condition (iii). Hence, the code is 'J S K T Y K'.
Choice (C)

37. The given group of elements is 6 9 * % 8 □.
This group follows conditions (iv).
Hence, the code is l W O J W W. Choice (B)

38. The given group of elements is ϕ 3 4 * 1 2 %. This group follows condition (ii).
Hence, the code is J B C O Z K E. Choice (D)

39. The given group of element is % ϕ □ 6 Δ
This group follows condition (ii).
Hence the code is Y E T I J. Choice (B)

40. The given group of elements is 2 ∀ ϕ 3 6 Δ. This group follows condition (i).
Hence, the code is N T E V V Y. Choice (C)

Solutions for questions 41 to 45:

41. From choice (A), '34' does not represent the letter 'A'.
From choice (B), '33' does not represent the letter 'T'.
From choice (C), all the numbers represent the corresponding letters in the given word. Choice (C)

42. From choice (A), '32' does not represent the letter 'y'.
From choice (B), all the numbers represent the corresponding letters in the given word. Choice (B)

43. From choice (A), '30' does not represent the letter 'R'.
From choice (B), '79' does not represent the letter 'E'.
From choice (C), '04' does not represent the letter 'R'.
From choice (D), all the numbers represent the corresponding letters in the given word. Choice (D)

44. From choice (A), all the numbers represent the corresponding letters in the given word. Choice (A)

45. From choice (A), '41' does not represent the letter 'E'.
From choice (B), '11' does not represent the letter 'B'.
From choice (C), '12' does not represent the letter 'E'.
From choice (D), all the numbers represent the corresponding letters in the given word.
Choice (D)

Solutions for questions 46 to 50:

46. From choice (A), '95' does not represent the letter 'B'.
From choice (B), all the numbers represent the corresponding letters in the given word.
Choice (B)

47. From choice (A), '12' does not represent the letter 'H'.
From choice (B), '65' does not represent the letter 'H'.
From choice (C), '03' does not represent the letter 'C'.
From choice (D), all the numbers represent the corresponding letters in the given word.
Choice (D)

48. From choice (A), '42' does not represent the letter 'G'.
From choice (B), '58' does not represent the letter 'G'.
From choice (C), all the numbers represent the corresponding letters in the given word.
Choice (C)

49. From (A), all the numbers represent the corresponding letters in the given word. Choice (A)

50. From (A), '97' does not represent the letter 'T'.
From (B), '12' does not represent the letter 'T'.
From (C), '34' does not represent the letter 'L'.
From (D), all the numbers represent the corresponding letters in the given word. Choice (D)

Chapter – 3
(Blood Relations)
Exercise – 3

Solutions for questions 1 to 11:

1. Anil's mother's husband is Anil's father. His father's mother is his grandmother. Anil's grandmother's granddaughter can be either Anil's sister or his cousin. Choice (D)

2. My mother's mother-in-law is my paternal grandmother. My paternal grandmother's only son is my father.
Choice (A)

3. My father's brother's only sibling is none other than my father. Choice (C)

4. My brother's grandfather is my grandfather either paternal or maternal. My grandfather's only son has one child only. Therefore he has to be my maternal uncle only. My uncle's son is my cousin. Choice (B)

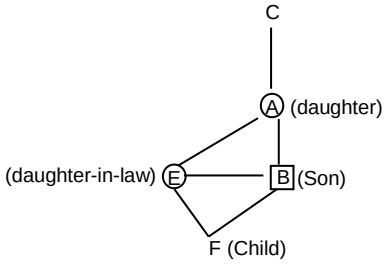
5. My mother's mother is my maternal grandmother. My maternal grandmother's daughter-in-law is my aunt. My aunt's daughter is my cousin. Choice (B)

6. Sheela is Rohit's sister's daughter. So Rohit is the maternal uncle of Sheela. Sheela was playing with Namit. But how Rohit is related to Namit is not given. Choice (D)

7. The man whom X met is the brother of X's husband. Hence the man is the brother-in-law of X. Choice (A)

8. The man's sister's husband is the man's brother-in-law. Brother-in-law's wife is his sister. Daughter of his sister is his niece. Choice (B)

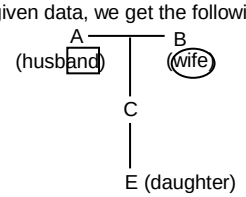
9. From the given data, we get the following tree diagram.



A is the grandmother of F but F can be either the grandson or the grand-daughter of A. Choice (D)

10. My father's sister is my aunt. My aunt's daughter is my cousin. Choice (A)

11. From the given data, we get the following diagrams.



Clearly, B is the grandmother of E. Choice (B)

Solutions for questions 12 to 16:

Given,
S * T means S is sister of T.
S + T means S is the brother of T.
S – T means S is the son of T.
S ÷ T means S is the daughter of T.
S = T means S is the father of T.
S x T means S is the mother of T.

12. A + C = B

A | brother of | C | father of | B

i.e. A is the uncle of B. Choice (B)

13. X = Z = Y means

X | father of | Z | father of | Y

So, X is the grandfather of Y and
X = Z x Y means

X | father of | Z | mother of | Y

⇒ X is the grandfather of Y. Choice (C)

14. Q ÷ P x R means

Q | daughter of | P | mother of | R

Implies P is the mother of Q and R Choice (B)

15. E x D – A means

E | mother of | D | son of | A

⇒ D is the son of A Choice (C)

16. P * R + Q means

P | sister of | R | brother of | Q

P is the sister of Q. Choice (D)

Solutions for questions 17 to 21:

Given that
A ( ) B means B is the mother of A.
A of B means B is the father of A.
A ÷ B means B is the sister of A.
A x B means B is the brother of A.
A + B means B is the daughter of A.
A – B means B is the son of A.

17. T – P ÷ Q

Q | sister of | P | son of | T

So, Q is the daughter of T. Choice (D)

18. L ( ) M ÷ N

N | sister of | M | mother of | L

M is the sister of N.
N is the sister of M. Choice (D)

19. P of Q + R

R | daughter of | Q | father of | P

⇒ R is the sister of P. Choice (C)

20. Y x Z ( ) K means

K | mother of | Z | brother of | Y

⇒ Z is the son of K. Choice (C)

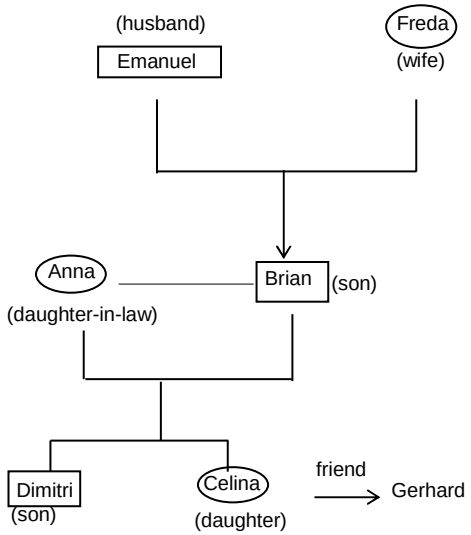
21. S x J + T means

T | daughter of | J | brother of | S

⇒ T is the niece of S.
Choice (B)

Solutions for questions 22 to 25:

From the given data, we get the following tree diagram.



22. Freda is the mother of Brian.
Choice (B)

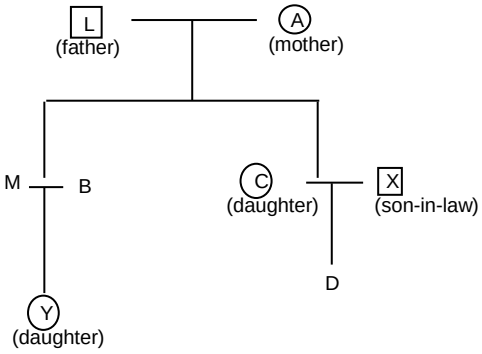
23. Gerhard is the friend of Celina and there is no relationship between Gerhard and Dimitri. Choice (D)

24. Emanuel is the grandfather of Celina.
Choice (D)

25. Anna is the daughter-in-law of Emanuel.
Choice (A)

Solutions for questions 26 to 30:

As per the given data, we get the following tree diagram.



The three married couples are L – A, M-B, and C-X. L and A have two grandchildren, Y and D. Either M or B is the mother of Y. C is the mother of D. Gender of D is not known.

26. Either M or B is the mother of Y.
Choice (D)

27. Since, the gender of D is not mentioned we can only say that D is the grandchild of A. Choice (C)

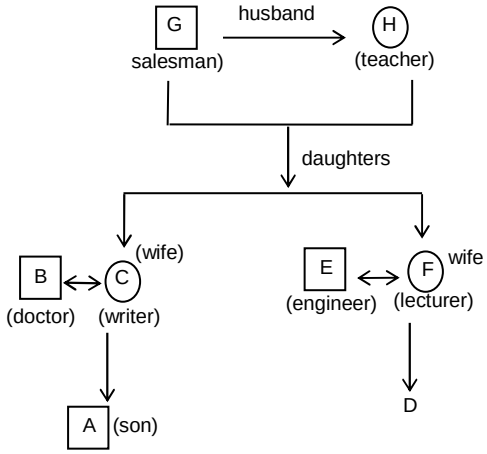
28. A is the wife of L. Choice (C)

29. Y is the grand-daughter of L.
Choice (D)

30. M is the spouse of B.
Choice (A)

Solutions for questions 31 to 35:

As per the given data we get the following tree diagram.



G(Salesman) is the husband of H(Teacher). Their daughters are C(Writer) and F(Lecturer) C's husband is B(Doctor). B and C have a son A. F and E are the parents of D(Gender not mentioned)

31. G is the salesman. Choice (B)

32. F is the wife of E. Choice (A)

33. H is the teacher. Choice (D)

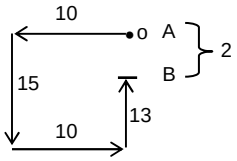
34. D's gender is not mentioned. Hence the relationship cannot be determined. Choice (D)

35. The engineer is E, who is the uncle of A. Choice (A)

Chapter – 4
(Direction Sense)
Exercise – 4

Solutions for questions 1 to 19:

1.

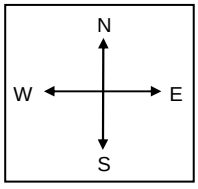


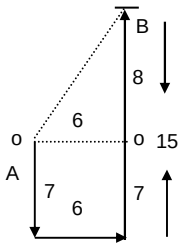
Let A and B be the initial and the final points in the journey.

The vertical distance between A and B is (15 – 13) = 2 m.

Choice (D)

2. For these questions, we should draw figures based on the given data:



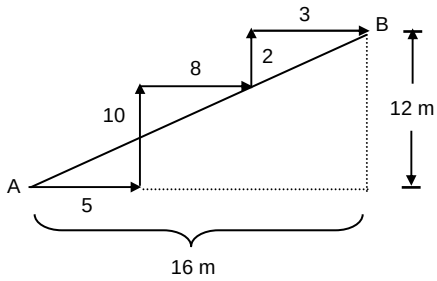


Let 'A' and 'B' be the initial and the final points in the journey.

Hence, AB = $\sqrt{6^2 + 8^2}$ = $\sqrt{100}$ = 10 km.

Choice (C)

3.

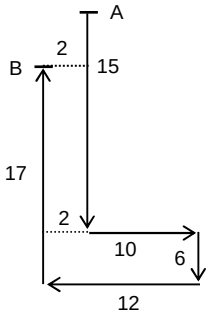


Let A be the house and B be the park.

Hence, AB = $\sqrt{(16)^2 + (12)^2}$ = $\sqrt{400}$ = 20 m.

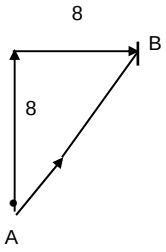
Choice (A)

4. Let A be the starting point and B be the final point of Shahana's journey,



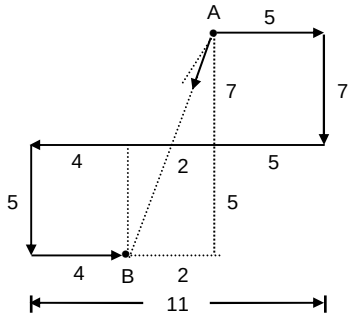
Hence, Shahana walks 2 km horizontally. She is facing North at the end of the journey. Choice (B)

5.



Let A and B be the initial and the final points in the journey.
B is to the North-East of A.
AB = $\sqrt{8^2 + 8^2}$ = 11 km (approx). Choice (B)

6.

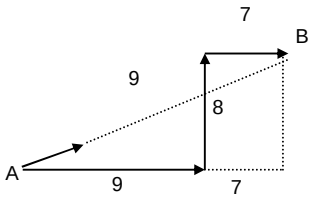


Let A and B be the initial and the final point respectively in the journey.

AB = $\sqrt{2^2 + (12)^2}$ = 12 km (approx)

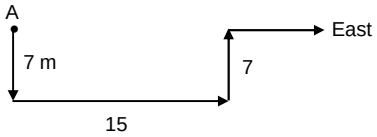
He is towards the South-west. Choice (B)

7.



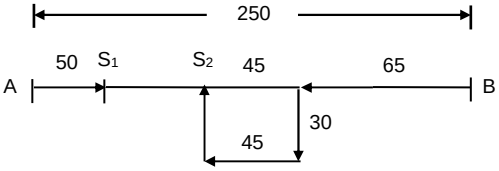
Let A and B be the initial and the final points respectively in the journey.
Salil is towards the North-east with respect to the original place.
AB = $\sqrt{(16)^2 + (8)^2}$ = 18 km (approx) Choice (D)

8.



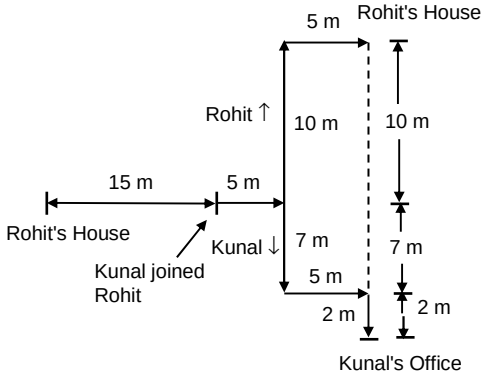
Since, I am now moving towards East, I must have started my journey towards South. Choice (D)

9.



Let the two motorists started from points A and B. The first one started from A and stopped at S_1. The second one started from B and stopped at S_2. First, one travelled 50 km and the second one travelled 65 + 45 = 110 km.
So, distance between S_1 and S_2 is 250 – (50 + 110)
= 90 km. Choice (D)

10.

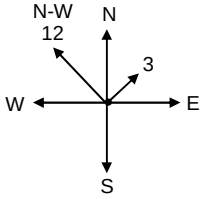


Total distance between the officers of Rohit and Kunal is 10 + 7 + 2 = 19 m, and Kunal was travelling towards the South at the end. Choice (D)

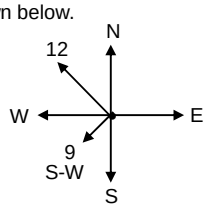
11. In evening the sun is in West hence shadow anything falls towards East.
∴ Sum as right is towards east, i.e. she is facing north.
∴ Rama is facing South.
Choice (A)

12. Given that – Piyush and Ravi were facing each other. Piyush's shadow fell to his left (i.e. towards West as it was morning). So, Piyush was facing North, and Ravi was facing South. Choice (A)

13. Given, the clock is so placed that the minute hand points towards North-west when it is 3 p.m.
i.e.

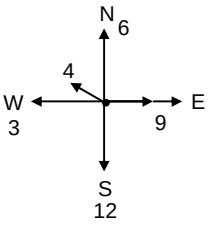


Similarly, at 9 a.m., the hour hand points toward South-west, as shown below.

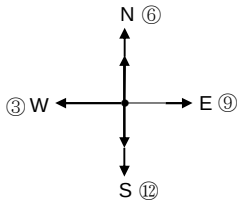


Choice (C)

14. When a watch shows 3:45, the minute hand points towards East, as shown below: (when the minute hand points towards 9, and hour hand points between 3 and 4, the time is 3:45.)

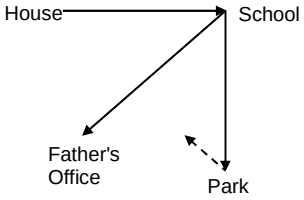


Now, when the watch shows 6 O' clock, then the minute hand points towards 12 and hour hand points towards 6, as shown below:



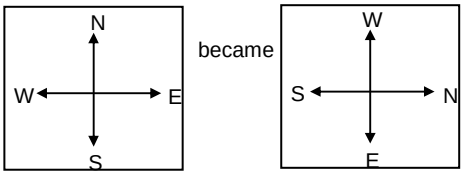
Hence, the hour hand will point towards North.
Choice (D)

15. As per the given data, we get



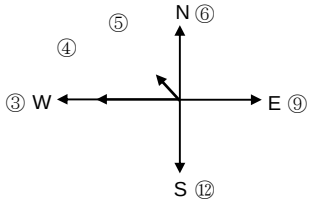
My house is towards the North-west of the park.
Choice (B)

16. Given that a compass was damaged and its needle turned in such a way that it showed North for East and so on.
So, the original directions



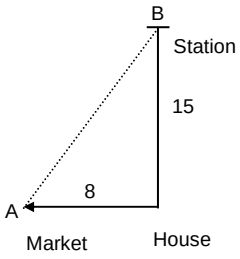
A person walked towards West, which is actually North.
Choice (D)

17. A watch shows 5:15, with the minute hand pointing towards West, as shown below:



At 5:15, the minute hand points towards 3, and the hour hand just beyond 5. Hence, the hour hand points towards North-West. Choice (A)

18.

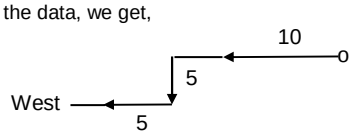


The shortest route is through the hypotenuse.

AB = $\sqrt{8^2 = (15)^2}$ = 17 km

They meet at a point 8.5 km midway between A and B. Choice (A)

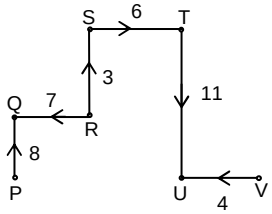
19. As per the data, we get,



So, I started the journey from West. Choice (D)

Solution for question 20 and 21:

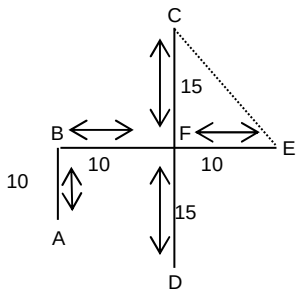
The given directions are,



20. P is to the West of V. Choice (B)

21. RU = $\sqrt{(PQ)^2 + (ST)^2}$ = $\sqrt{64 + 36}$ = 10 m. Choice (C)

Solutions for questions 22 and 23:



22. The City 'A' is towards north – west with respect to city 'D'. Choice (B)

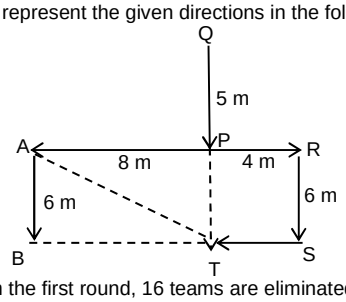
23. CE = $\sqrt{(CF)^2 + (FE)^2}$

CE = $\sqrt{(15)^2 + (10)^2}$ = $\sqrt{325}$ = 18km.(approx).

Choice (C)

Solutions for question 24 to 30:

Let us represent the given directions in the following diagram



24. In the first round, 16 teams are eliminated.
In the second round, 8 teams are eliminated.
In the third round, 4 teams are eliminated.
In the fourth round, 2 teams are eliminated.
In the fifth round, 1 team is eliminated, and the winner is decided. Choice (C)

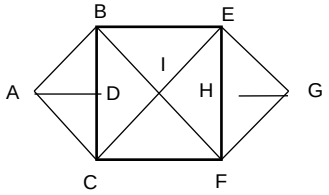
25. In the first round 7 matches take place.
In the second round there are 8 players. Therefore, 4 matches take place.
In third round 2 matches and in the final round one match takes place.
Overall, 14 matches take place. Choice (A)

26. Pranav's rank from top is 15th. Therefore, 14 people are in front of Pranav, while 35 students are behind him. Therefore, 14+35+1 = 50 students are passed. The total strength would be 50+12+15 = 77. Choice (B)

27. Given Ram's rank among boys is 21 and 37 from top and bottom respectively. Therefore, there are 56 boys. ➔ 35 girls. So, overall there are 91 students.
Ram's rank is 25th from the top and 25th from the bottom, total 49 students are passed.
Therefore, the required ratio is 49:91 = 7 13

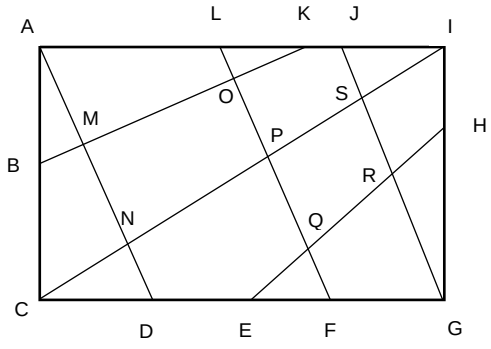
Choice (C)

28.



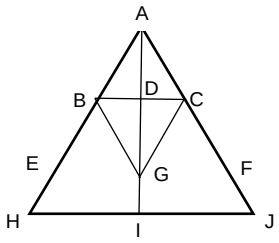
The triangles are ABD, ADC, ABC, BEC, CEF, BEF, BCF, BEI, EIF, CIF, BIC, EGF, EGH, GHI.
∴There are total 14 triangles. Choice (B)

29.



The triangles are ABM, ANC, ADC, DNC, ABK, ACI, JSI, GRH, GJI, QEF, LPI, ANI and many more.
Hence there are more than 12 triangles. Choice (D)

30.



The triangles are AHJ, AEF, ABC, AIH, AIJ, AGE, AGF, ADB, ADC, BGE, BDG, DCG, FCG, BGC, ABG, ACG.
Hence there are 16 triangles. Choice (D)

Chapter – 5
(Input and Output)
Exercise – 5

Solutions for questions 1 to 4:

By observing the input and the output, we can say that the numbers are arranged in an ascending order and by comparing the input and step I, arrangement is done by the method of swapping.

1. Given

Input:	441	331	251	101	95	65
Step I:	65	331	251	101	95	441
Step II:	65	95	251	101	331	441
Step III:	65	95	101	251	331	441

Step III is the final output. Choice (D)

2. Given,

Input:	75	65	27	89	32	15	94
Step I:	15	65	27	89	32	75	94
Step II:	15	27	65	89	32	75	94
Step III:	15	27	32	89	65	75	94
Step IV:	15	27	32	65	89	75	94
Step V:	15	27	32	65	75	89	94

Step V is the final output. Choice (D)

3.

Input :	510	320	720	540	200	440
Step I:	200	320	720	540	510	440
Step II:	200	320	440	540	510	720
Step III:	200	320	440	510	540	720

Step III is the final output. Choice (D)

4. Back tracking is not possible. Choice (D)

Solutions for questions 5 to 8:

As per given illustration, we get,
From input to step I,
Step I, is the square root of input.
In step II, step II is cube of step I and 2 is added to that obtained cube.
In step III, step III is twice of step II and 2 is added to every element obtained after doubling.
In step IV, step IV is summation of digits of every element of step III.
In step V, the elements of step IV are multiplied by 1, 2, 3, 4, 5 respectively in that order.

5.

Input:	49	25	36	9	81
Step I:	7	5	6	3	9
Step II:	345	127	218	29	731
Step III:	692	256	438	60	1464
Step IV:	17	13	15	6	15
Step V:	17	26	45	24	75

17 26 45 24 75
is the final output of the input. Choice (D)

6. Step III of the given input is,
692 256 438 60 1464
2nd element to the right of 3rd element from the right end is
3R – 2R = 1 R
First element from right end is 1464. Choice (A)

7.

Step II:	127	66	29	127	345
Step III:	256	134	60	256	692
Step IV:	13	9	6	13	17
Step V:	13	16	18	52	85

Required output step will be,
13, 16, 18, 52, 85. Choice (A)

8. Step IV will be,
13, 8, 6, 13, 17. Choice (A)

Solutions for questions 9 to 12:

The logic followed in step I is:
Divided by 4 + 2, +3, +5, +7…. (Consecutive primes)
Step II:
Divide by 2, for even numbers, subtract one and divide by two for odd numbers.
Step III:
Sum of the number plus its digits.
Step IV:
Arrange them in ascending order.
Step V:
Product of the digits.
Step VI:
x2 x3, x4….

9.

Input:	84	96	104	128	136	184	196
Step I:	23	27	31	39	45	59	66
Step II:	11	13	15	19	22	29	33
step III:	13	17	21	29	26	40	39
Step IV:	13	17	21	26	29	39	40
Step V:	3	7	2	12	18	27	0

Therefore, the smallest element is zero. Choice (A)

10. From the previous question, we get, three elements have same positions. Choice (A)

11. 432/4 = 108. Since it is fourth element +7.
Therefore, step I we get, 115.
Step II we get, (115 – 1)/2 = 57
Step III is sum of numbers plus its place values = 69.
Choice (B)

12. Since the order is changed in step IV, we cannot find the fourth element. Choice (D)

Solutions for questions 13 to 16:

From Input to Step I:
The number of letters in each word of the given input is written in Step I. Step II is the squares of the elements present in Step I.
Step III is the summation of digits of the numbers present in Step II.
In Step IV, elements of Step III are added by 1, 2, 3, 4, 5 respectively.
In Step V, the elements present in Step V are the summation of the corresponding elements in Step III and Step IV.
In Step VI successive prime numbers starting from 2 are added to elements in step V respectively.

13.

Input:	Gap	Puma	Reebok	Nike	Abdidas
Step I:	3	4	6	4	7
Step II:	9	16	36	16	49
Step III:	9	7	9	7	13
Step IV:	10	9	12	11	18
Step V:	19	16	21	18	31
Step VI:	21	19	26	25	42

Thus, the final output for the input "Gap Puma Reebok Nike Abdidas" is,
21 19 26 25 42. Choice (C)

14.

Input:	Goodday	Jaffa	McVities	ParleG	Creamfills
Step I:	7	5	8	6	10
Step II:	49	25	64	36	100
Step III:	13	7	10	9	1
Step IV:	14	9	13	13	6

14 9 13 13 6 is the step IV for the given input. Choice (A)

15. The input cannot be determined uniquely. Choice (D)

16. 25 is the fourth element from the right in Step II. Choice (B)

Solutions for questions 17 to 20:

The first step in the given input is sum of the place values of the consonants subtracted by the place values of vowels. If the same logic is followed the step I will be:
Nothing –>14 – 15 + 20 + 8 – 9 + 14 + 7 = 39 Is – 19 – 9 =10
Ever – 22 – 5 – 5 + 18 = 30 Lost – 12 – 15 + 19 + 20 = 36
Other – 20 – 15 + 8 – 5 + 18 = 26 Than – 20 + 8 – 1 + 14
= 41 Change – 3 + 8 – 1 + 14 + 7 – 5 = 26
Therefore, the step I is: 39 10 30 36 26 41 26
In step II, the logic is x1 + 7, x2 + 6, x3 + 5…..
Therefore, step II is: 46 26 95 148 133 248 183
Then the numbers are arranged in descending order:
Therefore, step III is: 248 183 148 133 95 46 26
Then the digits of the number are added by 1, 2, 3……, 7.
2 + 4 + 8 + 1 = 15, 1 + 8 + 3 + 2
=14, 1 + 4 + 8 + 3 = 16
1 + 3 + 3 + 4=11, 9 + 5 + 5
=19, 4 + 6 + 6=16, 2 + 6 + 7 =15.
Therefore, step IV is: 15 14 16 11 19 16 15
Step V is x2 + 1, x2 + 2, x2 + 3…. ➔
Step V is: 31 30 35 26 43 38 37
Step VI is the original word for the number. Therefore, all the steps are:

Input:	Nothing	Is	Ever	Lost	Other	Than	Change
Step I:	46	26	95	148	133	248	183
Step II:	46	26	95	148	133	248	183
Step III:	248	183	148	133	95	46	26
Step IV:	15	14	16	11	19	16	15
Step V:	31	30	35	26	43	38	37
Step VI:	Than	Change	Lost	Other	Ever	Nothing	Is

17. Third element of step IV is 16. Choice (C)

18. No word appears in the same position. Choice (A)

19. Only one element is present to the right of 38 in step V. Choice (B)

20. More than one of the above. Choice (D)

Solutions for questions 21 to 24:

The first step of the given input is the sum of the place values of the first and last letter.
44 37 34 33 35 32 46
Step II is the product of the digits plus the sum of the digits.
(4 x 4) + 4 + 4=24.
Step II : 24 31 19 15 23 11 34
Step III : is arranging the numbers in ascending order.
11 15 19 23 24 31 34
Step IV is x1 + 1, x2 – 2, x3 + 3, x4 – 4, x5 + 5
Step IV: 12 28 60 88 125 180 245
Step V is product of the digits:
Step V: 2 16 0 64 10 0 40
Step VI is the original word for the number. Therefore, all the steps are:

Input:	Sorry	Sir	Not	Meant	To	Tell	You
Step I:	44	37	34	33	35	32	46
Step II:	24	31	19	15	23	11	34
Step III:	11	15	19	23	24	31	34
Step IV:	12	28	60	88	125	180	245
Step V:	2	16	0	64	10	0	40
Step VI:	Tell	Meant	Not	To	Sorry	Sir	You

21. 2 is the first element in step V. Choice (B)

22. 'Not' and 'You' have the same positions. Choice (C)

23. Two elements are present between 88 and 245 in step IV. Choice (C)

24. 19 is the second element to the left of 24 in step III. Choice (A)

Solutions for questions 25 to 28:

The words given in the input are arranged in the alphabetical order in the output. Let us now analyse the input and the steps through which the output is determined. The given input is "taking decision three clear expects happen next public". In the given input, the word "clear" comes first in the dictionary, hence it occupies the first position and the remaining words follow the same order as they are in the input. In the second step, the second position is occupied by the word "decision". Similarly, the other words are also rearranged.

25. The last step for the given input is as shown below:
Input : products retail growth share little option board base
Step I : base products retail growth share little option board
Step II : base board products retail growth share little option
Step III: base board growth products retail share little option
Step IV: base board growth little products retail share option
Step V: base board growth little option products retail share
Step V is the final output. Choice (B)

26. The last step for the given input is obtained as shown below:
Input : chosen efforts count painful difficult ended total orders
Step I : chosen count efforts painful difficult ended total orders
Step II : chosen count difficult efforts painful ended total orders
Step III : chosen count difficult efforts ended painful total orders
Step IV : chosen count difficult efforts ended orders painful total
Step IV is the final output. Choice (A)

27. Step III for the given input is obtained as shown below.
Input : that there this provide many flows now years
Step I : flows that there this provide many now years
Step II : flows many that there this provide now years
Step III : flows many now that there this provide years
Choice (D)

28. In these type of questions, we cannot find the input from the output. It is not possible to know the initial position of the words in the input. Choice (D)

Solutions for questions 29 to 32:

Looking at the sample arrangement, we observe that
(1) words are arranged in increasing order of the number of letters in the word.
(2) The words with the same number of letters are arranged alphabetically as in a dictionary.
(3) the method of rearrangement is by interchange of positions of two words in each step.

29. Input : our objective is to build a profitable business
Final output : a is to our build business objective profitable
Choice (D)

30. Input : not all of us want our bicycles insured
Step I : of all not us want our bicycles insured
Step II : of us not all want our bicycles insured
Step III : of us all not want our bicycles insured
Step IV : of us all not our want bicycles insured
Choice (B)

31. Input : first world quality at third rate prices
Final output: at rate first third world prices quality
Choice (C)

32. We cannot determine the exact input from any step of the output. Because different inputs may give rise to the some output. Hence, the input cannot be determined.
Choice (D)

Solutions for questions 33 to 37:

33. $\frac{2x + 3y}{4x - 5y} = \frac{3}{5} \Rightarrow 5(2x + 3y) = 3(4x - 5y)$
$\Rightarrow 10x - 12x = -15y - 15y$
$-2x = -30y$
$\frac{x}{y} = \frac{30}{2} = \frac{15}{1}$
$\therefore x : y = 15 : 1.$ Choice (B)

34. Let the amounts with Ramu, Shamu and Bhimu be ₹R, ₹B and ₹S respectively.
$R + B + S = 120$, $R = S + 12$, $B = R + 6$
$R + R + 6 + R - 12 = 120$
$3R = 126 \Rightarrow R = 42.$ Choice (D)

35. Let the cost price be ₹x
If 10% loss is made, loss = $\frac{10x}{100} = \frac{x}{10}$
$x - \frac{x}{10} = 720$
$\Rightarrow x = 800$
If 20% profit is made, profit = $\frac{20}{100}(800) = ₹160$
Selling price is 800 + 160 = 960. Choice (C)

36. Let the sum invested = ₹p.
$\frac{p \times 1 \times 10}{100} + \frac{p \times 1 \times 18}{100} = 1260$
$p\left[\frac{28}{100}\right] = 1260$
$p = 4500$
$\therefore$ The sum invested in each is ₹4500. Choice (D)

37. The ratio of time periods of x and y
$= \frac{4}{2} : \frac{3}{3} = 2 : 1.$ Choice (A)

Solutions for questions 38 to 41:

By observing the given illustration, it can be understood that number and words are arranged alternately. Among numbers, the highest number is followed by the smallest number. Similarly, the second highest number is followed by second smallest number and so on.
Among words, the pattern is that at first all words are arranged alphabetically. Then after the first word is followed by the last word. The second word from the first is followed by the second word from the last and so on.

38. Step I: 82 joint effect 76 27 bank 45 hike
Step II: 82 bank joint effect 76 27 45 hike
Step III: 82 bank 27 joint effect 76 45 hike
Step IV: 82 bank 27 joint 76 effect 45 hike
Step IV is the final step.
$\therefore$Three more steps are required to complete the final arrangement. Choice (B)

39. Input: 73 24 51 18 twenty five months ago
Step I: 73 ago 24 51 18 twenty five months
Step II: 73 ago 18 24 51 twenty five months
Step III: 73 ago 18 twenty 24 51 five months
Step IV: 73 ago 18 twenty 51 24 five months
Choice (C)

40. According to the given logic, the final step for the given input is as follows:
71 and 21 took 61 four 31 the 51 fox 41 over
Choice (C)

41. Since backtracking is not possible, the definite input cannot be determined. Choice (D)

Solutions for questions 42 to 45:

By observing the given input and output we can say that, the numbers are arranged in the reverse alphabetical order and words are arranged in the descending order From one step to next step two operations are taking place. The smallest number and the first word in the alphabetical order are shifted to either ends. The number is shifted to the left end and the word is shifted to right end.
Input: "course 58 institute 78 97 will 68 reduce 12 number 21 student"
Step I: 12 course 58 institute 78 97 68 reduce number 21 student will
Step II: 21 12 course 58 institute 78 97 68 reduce number will student
Step III: 58 21 12 course institute 78 97 68 number will student reduce
Step IV: 68 58 21 12 course institute 78 97 will student reduce number
Step V: 78 68 58 21 12 course 97 will student reduce number institute
Step VI: 97 78 68 58 21 12 will student reduce number institute course
Step VI is the last step for the given input.

42. The word "institute" is fifth from the left end in step II.
Choice (C)

43. The pattern given is step IV. Choice (B)

44. Choice (A) is step V. Choice (A)

45. The word "course" is seventh from the right end in step V.
Choice (B)

Solutions for questions 46 to 50:

Input:	27 64 48 95 60 20 41 57 73 68 14 30
Step 1:	15 27 64 48 60 20 41 57 73 68 30 94
Step 2:	72 15 27 64 48 60 41 57 68 30 94 21
Step 3:	28 72 15 64 48 60 41 57 30 94 21 67
Step 4:	63 28 72 15 48 60 41 57 94 21 67 31
Step 5:	42 63 28 72 15 48 57 94 21 67 31 59
Step 6:	56 42 63 28 72 15 94 21 67 31 59 49

46. Both '94' and '21' appear exactly between '57' and '67' in step 4 of the given input. Choice (D)

47. '48 57 94 21' is found consecutively in step 5.
Choice (B)

48. The tenth element from the left end in step 2 of the given input is 30. Choice (A)

49. Third element from right end in step 4 is 21.
The second element from the left end in step 5 is 63.
21 + 63 = 84 Choice (C)

50. 94 appear sixth to the right of '63'. 'in step 5 of the given input. Choice (A)

Chapter – 6
(Critical Reasoning)

Exercise – 6

Solutions for questions 1 to 3:

1. The author assumes that the Indian Government should have taken care of its physical infrastructure. Radical change is for physical infrastructure but not global economy. So, I is not an assumption.
In the statement nothing is stated about the growth rate. Hence II is irrelevant. Choice (D)

2. In this the author has not clearly stated whether there is a need to channellise anger into energy or not. So, I is irrelevant.
In the statement II it is given that channellising anger to energy is a skill. Here the assumption of the author is that only those people who have the skill can channellise anger to energy.
Only II is implicit. Choice (B)

3. Here there is a competition in the market. To be a forerunner in the competition in exports one has to increase its exports. As government has reduced export duty under the assumption that the reduction in export duty will definitely help in increase in export quantity, hence, I is implicit.
II is a conclusion, that can be drawn from the statement but is not an assumption.
Only I is implicit. Choice (A)

Solutions for questions 4 and 5:

4. The employee is relating stress to attitude but not to success. Hence neither I nor II is implicit.
There is a relation between stress and attitude.
According to the employee attitude can make work stressful or stress less.
∴ Only III is implicit. Choice (B)

5. The statement is referring to average. Hence, I is not implicit. Getting bored is given as the reason for quitting the job. Hence, II is implicit. The statement does not refer to the star performer's attitude towards an enriched job.
Hence, III is not implicit.
∴ Only II is implicit. Choice (C)

Solutions for questions 6 to 8:

6. There is no clear information given regarding the demand in India. I is not a conclusion. From the statement, A-star will be….. in less than 40 months it can be concluded that 40 months ago its first car was launched. 40 months means 3 years and four months. Conclusion II follows.
Only II follows. Choice (B)

7. In the second part of the statement, the experts opinion is proved wrong. Hence, we can conclude that the experts judgment is not proper. Hence II follows.
There is no information given about the celebrities who are not stressed. Hence I does not follow. Choice (B)

8. I is an assumption. II is a suggestion but not a conclusion. Hence, neither I nor II follows. Choice (D)

Solutions for questions 9 and 10:

9. It is given that the police are not allowing the Indian tricolour to be burnt, while allowing the other flags to be burnt. If the embassies are in a foreign country, India would be a foreign country for them. In such a case, they may not allow flags of any country to be burnt.
Hence, I follow.
Conclusion II is not based on the information given in the passage. Hence, II does not follow.
As the police are allowing the flags of other countries to be burnt but not of India, it can be concluded that the burning of flags of foreign countries is not an offence. Hence, III follows.
∴ Only I and III follow. Choice (B)

10. From the statement, we understand that the U.N is trying to promote the non-violence policy. But the stance of each of the countries all over the world cannot be found out. Hence, I does not follow.
The statement does not explicitly state, who named October 2 as the international day of non-violence. Hence, II does not follow.
The intentions behind the U.N's efforts to promote non-violence, is to popularize it around the world in order to honour Mahatma Gandhi's principles. Hence, II follows.
∴ Only III follows. Choice (E)

Solutions for questions 11 to 15:

11. The Mumbai couple approached the court because the courts have the authority to sanction euthanasia. Hence, the inference is definitely true. Choice (A)

12. In the first passage, the couple approached the court as the legally permissible abortion time limit had been crossed. From this we can definitely conclude that there is a legally permissible time limit for abortion. So, the inference is definitely true. Choice (A)

13. At the end of the first paragraph "Fortunately or unfortunately the issue …….. lost the baby". The author himself is not sure whether the incident is fortunate or unfortunate. So, the inference is definitely false.
Choice (E)

14. In the second paragraph it is given that "surprisingly today it has been ……. countries". From this we can conclude that the author is in favour of euthanasia. Hence, the inference is definitely false. Choice (E)

15. Now here in the world one can die in the way one want, but if the person cannot be curved by any medical treatment, those persons can die that too with the permission of the courts. So, the inference is definitely false. Choice (E)

Solutions for questions 16 to 20:

16. Statement I explains a valid reason to go against such marriages because it is wrong to encourage anything that jeopardises the health of a person. Hence, I is a strong argument.
Statement II is not a valid argument because a custom being followed since a long time does not necessary make it good. Only I is strong. Choice (A)

17. Statement I : The basic purpose of conducting classes is to help students. Hence, statement I is a strong argument as it conveys this idea.
Statement II : If the institute conducts classes with the intention of making profits, then this is a valid point to be considered. Hence, statement II is also strong. Choice (E)

18. Just because some poor people are improving economically, we cannot conclude that there are good politicians. Any reason could be ascribed to such an improvement. Statement II is very vague and is not giving any reasons for the argument that it proposes. Hence, both the statements are weak arguments. Choice (D)

19. Sanctuary for endangered animals becomes necessary when it improves and betters the living conditions of the world. But at the same time, if an economy is not able to provide basic necessities to its people, then it cannot think of constructing sanctuaries. Therefore, the decision is based on both the factors viz. requirement and fund supply. Hence, both I and II are strong arguments. Choice (E)

20. Anything which hinders the learning process in a child must be controlled and, if possible, be prohibited. The aim of a teacher should be to make a child learn. According to argument I, beating causes hindrance to learning process of a child thus defeating the ultimate goal. If also supports its argument by referring to the findings of psychologists. Hence, I is a strong argument. Argument II states that a child will be spoiled if it is not caned. Caning is an extreme measure, there are also other softer methods to rectify a child. Moreover, the argument is not substantiated by any facts. Hence, II is a weak argument. Choice (A)

Solutions for questions 21 to 23:

21. The statement does not indicate why the roadside food leads to infection. It may be because it is cooked in unhygienic conditions. In such a case, I is a proper course of action but not II. If the food itself is unhealthy, then II is a proper course of action but not I. Hence, either I or II follows. Choice (C)

22. Course of action I assumes that there is no such kind of rule at present. So, I is not a proper course of action.
By improving the public transport system we can reduce the emission of black fumes as there will be less number of vehicles and also not allowing the factories to be built in and near the city would reduce pollution in the city.
Choice (B)

23. We do not know the reason for the addiction, so neither I nor II is a proper course of action. Choice (D)

Solutions for questions 24 and 25:

24. Here the problem is malaria and we know that the cause of malaria is mosquito. As we know that mosquitoes can be controlled by pesticides. So, I is a proper course of action.
Course of action II is not practically possible because that will cause a burden on the government. Hence it does not follow.
Course of action III is feasible and also not very costly, hence it is a proper course of action. Choice (A)

25. Here the course of action I is a negative course of action.
Course of action II can reduce rigging, as it says "they should be made to cast their votes". Hence it follows.
Course of action III can reduce rigging. As some authority should scrutinise the polling centers so that polling is conducted without rigging. Choice (A)

Solutions for questions 26 and 27:

26. "Indifferent" means having no opinion. That is, these people are neither against nor advocating reservations. Neither RI nor RII is explaining the reasons as to why these people are indifferent. Choice (D)

27. RI and/or RII must be a cause to effect the "Assertion". This means that if RI or RII is accomplished, the act given in the "Assertion" will be carried out. Let us examine RI and RII from this view-point.
RI : Having enough money does not become a cause for spending on such prizes. Hence, RI cannot be a valid reason.
RII : If the authors are to be encouraged, they must be given awards or prizes for appreciable works. This is a valid reason. Choice (B)

Solutions for questions 28 to 30:

28. Both (A) and (R) are true but the correct explanation for (A) is that the water is not suitable for cooking or drinking as it is very salty. Hence, both (A) and (R) are true and (R) is not the correct explanation of (A). Choice (B)

29. Both (A) and (R) are true. The atmosphere at that height is not conducive to human beings and the terrain is such that it is difficult to scale those slopes. Hence, both (A) and (R) are true and (R) is the correct explanation of (A).
Choice (A)

30. Both (A) and (R) are true. The correct explanation for (A) is increasing in uasge of fuels that release effluents in to the atmosphere. Hence, both (A) and (R) are true and (R) is not the correct explanation of (A). Choice (B)

Solutions for questions 31 to 35:

31. The given events are not related events as the place where Mr.X was killed and the place where it was raining heavily may or may not be the same.
Choice (E)

32. Event I and II are related events and chronologically II occurs before I. Only because of finishing 11th among 12 countries in the Hockey World cup, Hockey has become India's shame.
$\therefore$ It is the immediate and principle cause.
Choice (A)

33. Events I and II are related events and chronologically II occurs before I and because of as they are planning to increase capacity, they have to make a plan to sell their products also so they open new offices for marketing those products. But opening an office in a particular city, requires other events such as market survey etc.
$\therefore$ It is not the immediate and principle cause.
Choice (C)

34. Event I and II are related. Chronologically I occurs before II. Ragging of junior students is the immediate and principle cause for the suspension of the senior students.Choice (B)

35. Here both the events are related events and chronologically II occurs before I. But the excellent performance of the bowler is not the immediate and principle cause for the Indian victory. There may be other players (Batsman and fielders) who also need to play well for the Indian victory. Choice (C)

Solutions for questions 36 to 40:

36. The statements are referring to different aspects of norms and guidelines. I refers to uses, while II refers to the negative side of it. Hence, they are effects of a common cause. Choice (E)

37. As people think that parenting is easier when there is only one child, the single child family is becoming the norm. So II is the cause and I is the effect. Choice (B)

38. As the craze for learning English is growing among people, the institutes which teach English are mushrooming. So II is the cause and I is the effect. Choice (B)

39. As the number of talented people is less, those with talent are getting more opportunities. Hence, I is the cause and II is its effect. Choice (A)

40. I and II are referring to different aspects of economy. Hence, they are effects of independent causes.
Choice (D)

Chapter – 7
(Analytical Puzzles)
Exercise – 7(a)

Solutions for questions 1 and 2:

1.

Position	Student
1	B
2	D
3	C
4	E
5	A

A is the last to finish the race. Choice (C)

2. From the given information
P is taller than T $\Rightarrow$ P > T
U is shorter than Q who is taller than S
$\Rightarrow$ Q > U, S
S is taller than P but shorter than R
$\Rightarrow$ R > S > P
$\therefore$ Neither of P, Q, R and S can be shortest.
$\therefore$ Either U or T is shortest. Choice (D)

Solutions for questions 3 and 4:

S. No.	Stations	
	Leaving S_1	Reaching S_2
1	B_3	B_5
2	B_4	B_1
3	B_5	B_3
4	B_1	B_2
5	B_2	B_4

3. B_3 is the first bus to leave from S_1. Choice (B)

4. B_1 Leaves S_1 at 4th position and reaches S_2 in 2nd position. Choice (D)

Solutions for questions 5 to 9:

Let us represent the names of the animals with the first letters i.e T, L, E, C, G, D and B. By using the clue 1 we get the following arrangement of cages.

__ __ __ __ __ __ T

and from 3 and 4 we know that E, B, L, C are in the same order from left to right.

Now by considering the 2nd clue we get the final arrangement as

E B L C G D T.

5. Elephant's cage is at the extreme left end of the row. Choice (B)

6. Lion is in Cage 3. Choice (C)

7. Gorilla's cage is two places away to the right of Lion. Choice (A)

8. Chimpanzee's cage is at the centre. Choice (D)

9. The cages of Chimpanzee and Gorilla are adjacent to each other. Choice (A)

Solutions for questions 10 to 14:

Given E is the first person to buy tickets. H was the 6th person to buy tickets. From the clue, F bought immediately after A but before C. We know that A and F should buy before H.

Also given that G bought after atleast four persons and D bought before A, which means that D should have bought before H. B and C, buy tickets one after the other mean that B and C are 7th and 8th persons to buy the tickets in any order.

Hence the final arrangement is as follows.

1st	E
2nd	D
3rd	A
4th	F
5th	G
6th	H
7th	B/C
8th	C/B

10. D bought immediately after E. Choice (A)

11. Either B or C is the last person to buy the ticket. Choice (D)

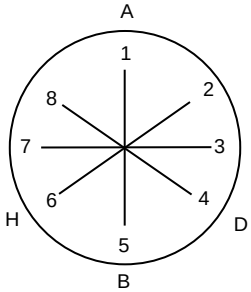
12. G bought immediately before H. Choice (B)

13. A and F are the two persons who bought the tickets in between D and G. Choice (C)

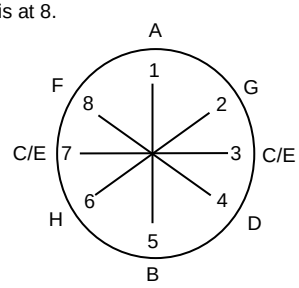
14. C bought immediately after H. Choice (D)

Solutions for questions 15 to 18:

After reading this set we know that A and B are opposite and that H and D are to the left and right of B.



We also know G is opposite H and that F does not sit at 7 or 3, hence he is at 8.



Places 7 and 3 can be filled by either C or E.

15. Right of A is F. Choice (B)

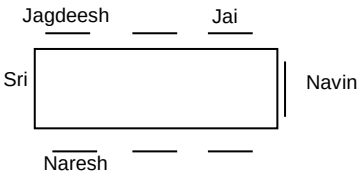
16. Two places to the right of B is 3 and either C or E can be at 3. Choice (D)

17. F would be opposite to H after the interchange. Choice (D)

18. Immediate left of G would be E. Choice (C)

Solutions for questions 19 to 22:

From (ii) (iii) (iv) and (v) we know that Navin and Sri are opposite each other on the shorter side of the table.



Using (i) arrangement is as the final given below.

19. Niki is opposite Jamuna. Choice (B)

20. Naman is opposite Jai. Choice (A)

21. Naresh and Naman are adjacent to Jamuna. Choice (C)

22. Niki is to the immediate left of Jagdeesh. Choice (D)

Solutions for questions 23 to 26:

Under the given conditions and clues we get the order for height as P > Q, R > Q, T is shortest.

The order for money is P < S, T > R > Q.

23. Now here S is tallest $\Rightarrow$ P and R can be either 2nd or 3rd, Q is 4th and T is the shortest. Choice (A)

24. If Q is taller than S then either P or R can be the tallest. Choice (D)

25. Here R has the 2nd highest money.
$\Rightarrow$ T has highest money but we don't know who has 3rd highest money hence cannot be determined. Choice (D)

26. R is always taller and also has more money than Q. Choice (B)

Solutions for question 27:

It is given that three trains numbered t_1, t_2 t_3 leave station S_1 and reach station S_2 The train number and the order in which they depart or arrive is not the same, i.e., T_1 is neither the first to leave S_1 nor the first to reach S_2. The same is the case of T_2 and T_3.

	S_1	S_2
1	T_2, T_3	T_2, T_3
2	T_1, T_3	T_1, T_3
3	T_1, T_2	T_1, T_2

It is given that the train that starts first at S_1 reaches last at S_2. This is only possible for T_2.

A	S_1	S_2
1	T_2	T_3
2	T_3	T_1
3	T_1	T_2

27. T_2 is the first train to leave from S_1.
Choice (B)

Solutions for questions 28 to 32:

Given the descending order of marks as per the 2nd and 3rd clue is Q > R > T > S.

Now from 1st and 4th we know that 2 people have the same marks and P got more marks than exactly one student.

Hence P got same marks along with T and got more marks than S. Hence the final arrangement is Q > R > T = P > S.

28. P and T got same marks.
Choice (D)

29. Q got the highest marks.
Choice (A)

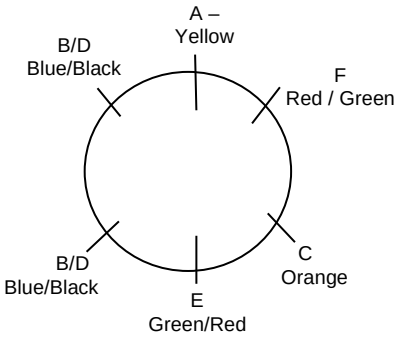
30. S got the least marks. Choice (B)

31. Three students got less marks than R.
Choice (C)

32. Statement I is false.
Statement II is true.
Statement III is true.
∴ Only II and III. Choice (C)

Solutions for questions 33 to 36:

Based upon the given data, the seating arrangement of the six monkeys is as follows:



33. The colour of tail of monkey F is either Red or Green.
Choice (D)

34. If the colour of the tail of monkey E is red, then the tail of monkey F, which is adjacent to A is green. Choice (A)

35. Irrespective of who is adjacent to E, B's tail is either blue or black colour. Choice (D)

36. If B is adjacent to A, then D is opposite F.
Choice (D)

Solutions for questions 37 to 40:

From 1 we get:
Hillary / Baskar
Chinmay
Tiscon / Tony
Combining all the other data we get:
Harish
Hillary / Baskar
Baskar / Hillary
Chinmay
Tywin
Tiscon
Balu
Tony

37. Among the given four, Chinmay attended the highest number of classes. Choice (A)

38. Tony attended the least number of classes.
Choice (C)

39. Hillary attended the second greatest number of classes.
Choice (A)

40. Balu attended the second least number of classes.
Choice (B)

Solutions for questions 41 to 44:

From the given details the arrangement would be:
Ben – Avengers
Man – Spiderman
Bronn – Captain Marvel
Jon – Ironman

Finn – Thor
Ron – Hulk

41. Bronn went to the movie Captain Marvel.
Choice (C)

42. Jon went to the movie Ironman. Choice (D)

43. Finn went to the movie Thor. Choice (A)

44. Ron went to the movie Hulk. Choice (B)

Solutions for questions 45 to 48:

Based upon the given information, we get the following distribution:
A – ITC
B – Westin
C – Hyatt
D – Taj
E – Oberoi
F – Leela
G – Lodhi

45. D visited hotel Taj. Choice (B)

46. E visited hotel Oberoi. Choice (C)

47. F visited hotel Leela. Choice (B)

48. A visited hotel ITC. Choice (A)

Solutions for questions 49 to 52:

Name	Winterfell	Vale	Stormlands	Highgarden	Casterly Rock	Dorne	Iron Islands
Arya	✓		✓		✓		
Bran	✓			✓		✓	
Cat			✓		✓	✓	
Dany		✓				✓	✓
Eddard	✓	✓	✓		✓		
Frey			✓				✓
Gendry	✓		✓			✓	✓

49. The history of Stormlands is read by the most number of people. Choice (B)

50. The history of Casterly rock is read by exactly three people. Choice (C)

51. The history of Dorne is read by exactly four people. Choice (C)

52. The history of High garden is read by the least number of people Choice (B)

Solutions for questions 53 to 56:

	Polo	Skating	Rugby	Hockey	Baseball	Thriller	Horror	Comedy	Action	Romance
P	✓	✓						✓	✓	
Q			✓	✓	✓	✓	✓			✓
R	✓		✓		✓			✓	✓	✓
S		✓		✓	✓	✓		✓	✓	
T	✓	✓			✓	✓	✓	✓		✓

53. Baseball is liked by the highest number of students. Choice (D)

54. Horror movies are liked by least number of students. Choice (B)

55. P likes neither any movie nor any sport liked by Q. Choice (A)

56. Only one student, T likes both thriller movies and polo sport. Choice (A)

Solutions for questions 57 to 60:

From the given data first arrange the distributions.
From I and IV, A is not wearing Jute and Nylon. From II, F is not wearing Nylon. From III and IV D and E are not wearing nylon. Therefore, only, B is wearing nylon. With the similar logic we get:
A – Woollen
B – Nylon
C – Cotton
D – Silk
E – Linen
F – Jute

Now, If A is selected, then F and E should not be selected. Therefore, if A is selected, B, C and D are selected.

57. If either C or D is not selected then, A, B, E and F must be selected at a time. Which is not possible. Hence, C must be selected. Choice (C)

58. If F is selected, then A is not selected. C and D are definitely selected. E is selected only if B is selected. Therefore, E is not selected, but B is selected. E wore linen saree. Choice (D)

59. A wore woollen saree. Choice (B)

60. If E is selected, then B is selected. We know C and D are always selected. Therefore, A and F are not selected. Choice (D)

Exercise – 7(b)

Solutions for questions 1 to 5:

Let each of five persons is denoted by the first letter of their name.
From (2) Neither D nor E is on extreme end
From (3), C is to living in the house which is to the immediate left of the house in which E is living, hence the following cases are possible.

C E __ __ __

Case (1)

__ C E D __

Case (2)

__ D C E __

Case (3)

From (4) Neither B nor D is painted with Red.
From (1) House of A is to the left of the house which is painted with Red.
∴ In case (2) and (3) A occupies left most house.
But in case (i) A is left to either B or D but which are not painted in Red (from 4). (1) is not possible.
From (6) Extreme house is not painted in White.
∴ The possible arrangements are

A C E D B
Blue

Case (2)

A D C E B
Blue

Case (3)

From (5) Green colour building is to the immediate left of Red building and in that either E or D lives. It is not possible in case (2)

∴ Case (3) is the only possibility and the arrangement will be

A	D	C	E	B
Blue	Green	Red	White	Pink

1. B lives in Pink coloured building. Choice (A)

2. White building is to the immediate left of Pink coloured building. Choice (A)

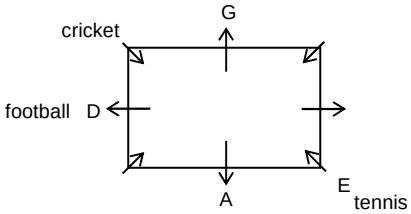
3. A stays in the extreme left end house. Choice (A)

4. Red building is exactly at the middle of the row. Choice (B)

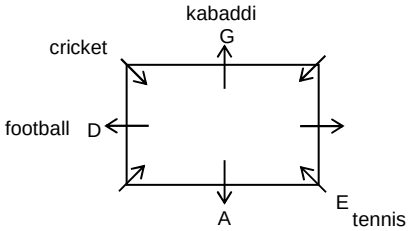
5. There are three houses to the right of D's house. Choice (C)

Solutions for questions 6 to 10:

It is given that, E plays tennis or kabaddi but either D or G plays kabaddi. Hence E plays tennis and the cricket player and the tennis player sit opposite each other. A sits second to the left of football player who sits adjacent to neither E nor squash player. A plays neither cricket nor volleyball and not adjacent to cricket player.

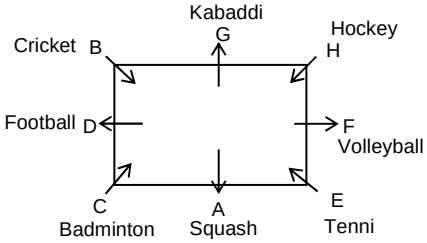


Kabaddi and cricket players sit adjacent to each other. D sits second to the right of A.
Hence D plays football and G plays kabaddi.



C sits adjacent to squash player. H and volleyball player sit adjacent to each other and H is neither squash player nor badminton player. And B sits second to the right of the hockey player.

Hence, the final arrangement is as follows.



6. B plays cricket. Choice (C)

7. F plays volley ball. Choice (B)

8. C sits second to the right of the cricket player. Choice (C)

9. 'H – hockey 'is true. Choice (A)

10. Both (A) and (C) are true. Choice (D)

Solutions for questions 11 to 15:

By using the clues we conclude that the Khurana family stays on the 6th floor and owns a Punto, the family on the 5th floor owns a Ritz, and the family on 1st floor owns a Figo.

From the 4th clue and the 2nd clue we know that the Dixit family stays on the 5th floor and owns a Ritz. From the last clue we know that the Khan family owns a Swift and stays on the 2nd floor. The Rajput family stays on the 3rd floor.

Hence the Kapoor family stays on the 1st floor and owns a Figo (from the 1st clue).

As the khanna family does not own a Spark ⇒ the Rajput family owns a Spark and the Khanna family owns a Palio.
The final arrangement is as follows.

Family	Car	Floor
Khurana	Punto	6
Dixit	Ritz	5
Khanna	Palio	4
Rajput	Spark	3
Khan	Swift	2
Kapoor	Figo	1

11. The Rajput family owns a Spark. Choice (A)

12. The Rajput family stays on the 3rd floor. Choice (C)

13. The car owned by the Dixit family is Ritz. Choice (D)

14. The Khanna family stays on the 4th floor. They own a Palio. Choice (B)

15. Statement I is false.
Statement II is true.
Statement III is true.
∴ Only II and III are true. Choice (D)

Solutions for questions 16 to 20:

From clues we know that Suraj is in the same group as Qureshi. As Pratap is along with Taruni and Taruni's group has more number of boys ⇒ Suraj and Qureshi should be in Taruni's group.
⇒ The two groups would be Raveen, Umar and the other group is Taruni, Pratap, Qureshi, Suraj.

16. Raveena's group has only 2 students. Choice (B)

17. If Suraj is not in Group B ⇒ He is in Group A.
Hence Group A would have four students. Choice (D)

18. Umar is not there in Pratap's group. Choice (C)

19. We can arrange these six students in 2 ways Group A, Group B and vice versa. Choice (B)

20. Statement I is false.
Statement II is true.
Statement III is true.
∴ only II and III are true. Choice (D)

Solutions for questions 21 to 25:

From the clues given we know that the rank of M in average is 3rd and in number of centuries is 1.
We can also deduce that the rank of N in number of centuries is 3rd and is the 2nd youngest.
Given P does not have the least average.
⇒ P gets 2nd rank in average
Hence L gets 5th rank in average.

Now we can put down the order of people according to their rank in age as follows.
P, Q, L, N, M
Similarly in number of centuries the order would be
M, L, N, P, Q and in averages the order is N, P, M, Q, L.

21. L got the 2nd rank. Choice (B)

22. M got the highest number of centuries. Choice (C)

23. M is the youngest player. Choice (D)

24. P has the 2nd highest average. Choice (A)

25. None of the given choices is true. Choice (D)

Solutions for questions 26 to 30:

It is given that,

(i) P (+) —— Q
|
A (–)

(ii) ( ) + —— (B) —— ( ) – (+)

(iii) (D)
|
( ) +

Given, P is the brother of Q, who is not adjacent to either P or S. Hence Q sits either at the left end or right end and R sits adjacent to Q. Also given, A is the daughter of P and sits to the immediate right of B's husband. C is the niece of P. Hence, D is the husband of B and as D is not opposite to either P or S, we get the following cases.

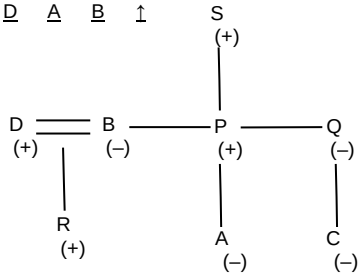
(i) P/S S/P R Q
— — D A

(ii) Q R S/R P/S
D A — —

(iii) Q R S/P P/S
— D A —

Given, C does not sit opposite either P or S, hence case (i) and (ii) can be eliminated. In case (iii), C sits at the left end, B sits at the right end. Given, B is not opposite S, but is opposite her brother. Hence, B is opposite P, who is the brother of B. As, D has only one child who is a male, it is either R or S and C is the daughter of Q but, given Q is the daughter of C's grand father who is not R. Hence R should be the son of D and S is the grand father of C. Therefore the final arrangement and the family tree are as follows

Q R S P ↓
C D A B ↑



26. D's father-in-law (S) is to the immediate right of P. Choice (C)

27. Q's daughter sits at an end. Choice (C)

28. C's aunt (B) sits opposite C's uncle (P). Choice (D)

29. Except Q, all other do not sit at an end. Choice (C)

30. Choice (B) is true. Choice (B)

Solutions for questions 31 to 35:

The descending order of the speed can be found using 1st clue.
Anil > Chetan > Bharath > Divya
Anil does not travel 300m and does not travel for the least amount of time 15s.

From 3rd clue we understand that Anil should have a speed greater than 8 m/s.

Now Anil can have a speed of either 9 m/s or 12 m/s but by taking 9 m/s (ie., 180m in 20s) there is possibility of another person also having same speed. Hence we can conclude that the speed of Anil is 12 m/s (240 m in 20s). The person who travelled 120m for 15s has the 2nd highest speed i.e., Chetan.

Bharath travelled for 300m in 40s and Divya travelled for 180m in 30s.

The final table is as follow.

	Distance	Time	Speed
Anil	240	20	12 m/s
Chetan	120	15	8 m/s
Bharath	300	40	7.5 m/s
Divya	180	30	6 m/s

31. Chetan travelled the least distance. Choice (B)

32. Chetan traveled 120 m in 15 sec. So, his speed is $\frac{120}{15}$ = 8 m/s Choice (C)

33. 12 m/s is the highest speed. Choice (D)

34. The lowest speed is 6 m/s. Choice (A)

35. Statement I is true.
Statement II is false.
Statement III is true.
Only I and III are true. Choice (D)

Solutions for questions 36 to 40:

From the 1st clue we know the descending order of the discount obtained on the articles D > B > A > C.
From 2nd and 3rd clue we know that D does not have the market price of ₹375 nor has highest discount percentage 60%.
⇒ D should get a discount of ₹120 or ₹150.
Let us assume D gets discounts of ₹120.
The two articles i.e, articles having market price of ₹375 and ₹225 will have same discount which violates the condition given (4th clue). Hence D is sold at a discount of ₹150 i.e, market price of D is ₹300 and discount percentage is 50% now the article with M. P. of ₹375 is sold after a discount of ₹112.5 at 30% discount percentage. The article with M. P ₹225 is sold after a discount of ₹135 with a discount percentage of 60%.
Finally the article with MP of ₹150 is sold after a discount of ₹60 with a discount percentage of 40%.

Let us tabulate the data obtained.

	MP	D%	Discount	SP
A	₹375	30%	₹112.50	₹262.50
B	₹225	60%	₹135	₹90
C	₹150	40%	₹60	₹90
D	₹300	50%	₹150	₹150

36. The highest discount offered is ₹150. Choice (A)

37. The least discount offered is ₹60. Choice (D)

38. Article B is sold at a discount of ₹135. Choice (B)

39. Article A has the highest selling price. Choice (A)

40. The highest selling price is ₹262.50. Choice (B)

Solutions for questions 41 to 45:

Given (i) $P \Rightarrow Q$, $\sim Q \Rightarrow \sim P$
(ii) $\sim T \Rightarrow \sim U$; $U \Rightarrow T$
(iii) $\sim S \Rightarrow \sim R$; $R \Rightarrow S$
(iv) Only one between R and P is selected.

41. R is selected $\Rightarrow$ S is selected
Hence either Q or T must be selected in a team of 3.
Choice (D)

42. T is not selected $\Rightarrow$ U is not selected
Minimum size is RS or PQ.
$\therefore$ 2 is the minimum size of the team. Choice (B)

43. When Q is selected, the maximum possible size can be 5.
i.e, except P or except R. Choice (C)

44. In a team of 5, either P or R is not selected.
Choice (D)

45. Statement I may are may not be true.
Statement II is true.
Statement II may or may not be true.
$\therefore$ Only II is true. Choice (B)

Solutions for questions 46 to 50:

Given 7 players and they are from 7 different places.
As Sachin and sehwag are not from Delhi and Kerala respectively, tina is neither from Hyderabad nor Bangalore, He can be from any of the other cities except those mentioned above.
In the same manner we proceed for the other players.
Let us write the places and the people who can be from that place.

Hyderabad	–	Sachin, Sehwag, Dhoni, Yuvraj,
Bangalore	–	Sachin, Sehwag.
Delhi	–	Sehwag, Raina, Dhoni, Yuvraj.
Kerala	–	Sachin, Raina.
Chennai	–	All players.
West Bengal	–	All players except Munaf.
Gujrat	–	All players except Kohli.

46. From the above analysis if Raina is from Delhi then Sachin would be from Kerala. Choice (B)

47. If Sachin is from Hyderabad then Sehwag is from Banglore, Raina is from Kerala. Choice (B)

48. Raina is from West Bengal $\Rightarrow$ Sachin is from Kerala and hence Sehwag is from Bangalore. Choice (C)

49. Now if Kohli is not from West Bengal then Munaf is from Gujarat. Choice (D)

50. If Sachin is from West Bengal $\Rightarrow$ Kohli is from Chennai and Munaf is from Gujarat, then Raina is from Kerala and Sehwag is from Bangalore.
We need to adjust Dhoni and Yuvraj only
Hence 2 combination. Choice (B)

Chapter – 8
(Number and Letter Analogies)
Exercise – 8

Solutions for questions 1 to 50:

1. 9 : 16 : : 49 : _____
$3^2 : 4^2 : : 7^2 : \underline{8^2}$
3 + 1 = 4, 7 + 1 = 8 and $8^2 = 64$ Choice (C)

2. 48 : 120 : : 35 : _____
$7^2 - 1 : 11^2 - 1 : : 6^2 - 1$: _____
7 + 4 = 11, 6 + 4 = 10 and $10^2 - 1 = 99$ Choice (B)

3. 324 : 18 : : 576 : _____
$\sqrt{324}$ = 18 and $\sqrt{576}$ = 24 Choice (D)

4. 64 : 512 : : 100 : _____
$8^2 : 8^3 : : 10^2 : \underline{10^3}$
$10^3 = 1000$ Choice (D)

5. 15 : 90 : : 17 : _____
15 x 6 = 90 and 17 x 6 = 102 Choice (A)

6. 7 : 91 : : 13 : _____
7 x 13 = 91 and 13 x 13 = 169 Choice (A)

7. 625 : 526 : : 225 : _____
The digits in the given numbers are reversed.
625 when reversed is 526. Similarly, 225 when reversed is 522. Choice (C)

8. 9 : 72 : : 16 : _____
$9^2 - 9 \Rightarrow 81 - 8 = 72$
Similarly, $16^2 - 16 = 256 - 16 = 240$ Choice (C)

9. 31 : 37 : : 41 : _____
Next prime number to 31 is 37. Similarly, next prime number to 41 is 43. Choice (D)

10. 3 : 81 : : 7 : _____
3 and $(3)^4 = 81$
Similarly, 7 and $(7)^4 = 2401$ Choice (D)

11. 110 : 132 : : 210 : _____
$10^2 + 10 \Rightarrow 100 + 10 = 110$
$11^2 + 11 \Rightarrow 121 + 11 = 132$
where 10 + 1 = 11
Similarly, $14^2 + 14 = 210$ and $15^2 + 15 = 240$
Choice (B)

12. 23 : 529 : : 29 : _____
23 and $(23)^2 = 529$
Similarly, 29 and $(29)^2 = 841$ Choice (D)

13. 64 : 16 : : 70 : _____
$64 \div 4 = 16$
Similarly, $70 \div 4 = 17.5$ Choice (B)

14. 216 : 36 : : 1331 : _____
$(6)^3 : (6)^2 : : (11)^3 : (11)^2$
$(11)^2 = 121$ Choice (A)

15. 28 : 15 : : _____ : 63
15 + 13 = 28
Similarly, 63 + 13 = 76 Choice (C)

16. 89 : 83 : : _____ : 67
Next prime number to 83 is 89. Similarly, the next prime number to 67 is 71. Choice (B)

17. 23 : 161 : : 19 : _____
23 x 7 = 161
Similarly, 19 x 7 = 133 Choice (D)

18. 2 : 32 : : 4 : _____
2 and $(2)^5 = 32$
Similarly, 4 and $(4)^5 = 1024$ Choice (D)

19. 7 : 53 : : 8 : _____
7 x 7 + 4 = 49 + 4 = 53
Similarly, 8 x 7 + 4 = 56 + 4 = 60 Choice (B)

20. 21 : 440 : : 18 : _____
21 and $(21)^2 - 1 = 441 - 1 = 440$
Similarly, 18 and $(18)^2 - 1 = 324 - 1 = 323$
Choice (C)

21. 400 : 420 : : 961 : _____
$(20)^2$ and $(20)^2 + 20 = 420$
Similarly, $(31)^2$ and $(31)^2 + 31 = 992$ Choice (B)

22. 1225 : 1190 : : 1089 : _____
$\sqrt{1225}$ = 35 and 1225 – 35 = 1190
Similarly, $\sqrt{1089}$ = 33 and 1089 – 33 = 1056
Choice (A)

23. 2197 : 13 : : 729 : _____
Cube root of 2197 = 13 and cube root of 729 = 9
Choice (C)

24. 625 : 5 : : 1296 : _____
Fourth root of 625 = 5
Similarly, fourth root of 1296 = 6 Choice (D)

25. 41 : 43 : : 47 : _____
Next prime number to 41 is 43. Similarly, next prime number to 47 is 53. Choice (C)

26. 182 : 210 : : 342 : _____
$182 = 13^2 + 13$
$210 = 14^2 + 14$
Similarly, $18^2 + 18 = 342$ and $19^2 + 19 = 380$
Choice (B)

27. 468 : 163664 : : 579 : _____
$468 \rightarrow 4^2\ 6^2\ 8^2 = 163664$
Similarly, $579 = 5^2\ 7^2\ 9^2 \Rightarrow 254981$ Choice (D)

28. 13 : 127 : : 46 : _____
$13 \rightarrow (1)^3 = 1$ and $(3)^3 = 27$ i.e., 127
Similarly, $(4)^3\ (6)^3 = 64216$ Choice (D)

29. 18 : 342 : : 17 : _____
$(18)^2 + 18 = 324 + 18 = 342$
Similarly, $(17)^2 + 17 = 289 + 17 = 306$ Choice (C)

30. 4 : 256 : : 5 : _____
$(4)^4 = 256$
Similarly, $(5)^5 = 3125$
The digit is raised to its power. Choice (B)

31. 14 : 182 : : 16 : _____
$(14)^2 – 14 = 196 – 14 = 182$
Similarly, $(16)^2 – 16 = 256 – 16 = 240$ Choice (D)

32. 57 : 711 : : 1113 : _____
Successive prime numbers are given.
Next prime number to 5 is 7 and for 7 is 11.
Similarly, for 1113 the missing numbers are 1317.
Choice (A)

33. 29 : 66 : : 127 : _____
This can be written as
$(3)^3 + 2 : (4)^3 + 2 : : (5)^3 + 2$: _____
$(6)^3 + 2 \Rightarrow 216 + 2 = 218$ Choice (A)

34. 24 : 47 : : 76 : _____
24 x 2 – 1 = 48 – 1 = 47
Similarly, 76 x 2 – 1 = 152 – 1 = 151 Choice (D)

35. 12 : 1728 : : 8 : _____
$(12)^3 = 1728$
Similarly, $(8)^3 = 512$ Choice (C)

36.

P	C	D	Similarly,	B	K	S	
+3	+4	+5		+3	+4	+5	
S	G	I		E	O	X	

Choice (D)

37.

L	E	M	O	N	
+4	+4	+4	+4	+4	
P	I	Q	S	R	
Similarly,					
O	R	A	N	G	E
+4	+4	+4	+4	+4	+4
S	V	E	R	K	I

Choice (D)

38. Each letter in the word is coded with its preceding and the succeeding letters.
For ex: M
Preceding and succeeding letters for M are L and N.
So, MAN : LNZBMO
Similarly, SUN : RTTVMO Choice (A)

39.

L	A	M	P
–7	–7	–7	–7
E	T	F	I
Similarly,			
B	A	N	D
–7	–7	–7	–7
U	T	G	W

Choice (B)

40.

P	L	A	N	
–3	–3	–3	–3	
M	I	X	K	
Similarly,				
M	A	P	L	E
–3	–3	–3	–3	–3
J	X	M	I	B

Choice (D)

41. Train runs on Tracks, similarly Bus runs on Road.
Choice (B)

42. Earth is a Planet and Carrot is a Vegetable.
Choice (A)

43. Wood is raw material for Carpenter and Iron is raw material for Blacksmith. Choice (D)

44. Pen is used to Write and Knife is used to Cut.
Choice (B)

45. The younger one of a Pig is Piglet and the younger one of Dog is Puppy. Choice (D)

46. A **y**oung cow is a calf; young horse is a foal. Similarly, a young dog is a puppy. Choice (D)

47. Bike is ridden by a rider, Car is driven by a chauffeur. Similarly, Horse is ridden by a Jockey. Choice (B)

48. Analgesia is lack of pain. Apathy is lack of feeling. Similarly, Avolition is lack of motivation. Choice (A)

49. The 1st and 2nd words are synonyms while the third one is an antonym. Ingenious – Genius.
In Choice (2) Intensive and Rigorous are synonym s while Superficial is its antonym. Choice (B)

50. Inventions and discoveries are done by a scientist. Similarly, treatment are provided and surgeries are performed by a Doctor. Choice (A)

Chapter – 9
(Odd man out)

Exercise – 9

Solutions for questions 1 to 50:

1. All except '76' are the multiples of 3. Choice (C)

2. All except '32' are the multiples of 6. Choice (D)

3. All except '514' are the cubes of natural numbers.
$125 = 5^3$, $216 = 6^3$, $343 = 7^3$, $8^3 = 512$ but 514 is given.
Choice (D)

4. Place values of all the letters except 'u' are perfect squares.
Choice (D)

5. All except 'FV' are the pairs of corresponding letters in the alphabet series. (Sum is 27 for all except FV)
Choice (D)

6. (A) $C^{+13}P$ (B) $J^{+14}X$ (C) $D^{+13}Q$ (D) $L^{+13}Y$
All except JX follow the same pattern. Choice (B)

7. All except '1974' are leap years. Choice (D)

8. All except '46' are multiples of '7'. Choice (A)

9. All except '0' are natural numbers. Choice (D)

10. All except '50' are divisible by 3. Choice (D)

11. (A) $222 = 6^3 + 6$ (B) $350 = 7^3 + 7$
(C) $520 = 8^3 + 8$ (D) $738 = 9^3 + 9$

As Choice (A) is 214, it is the odd one. Choice (A)

12. All the numbers except 748, can be expressed in the form of $N^3 - N^2$.
Ex: $18 = 3^3 - 3^2$; $48 = 4^3 - 4^2$
$100 = 5^3 - 5^2$; $648 = 9^3 - 9^2$ Choice (D)

13. All the given letters except 'o' are from the first half of the alphabet series. Choice (D)

14. All except '39' are divisible by 9. Choice (B)

15. All except '603' have sum of the digits equal to 11. Choice (D)

16. All except (6, 18, 19) are pythagorean triplets. Choice (D)

17. All except 's' are from the first half of the alphabet series. Choice (B)

18. All the group of letters except 'RST' are from the first half of the alphabet series. Choice (D)

19. All except 'SF' are the pairs of corresponding letters from the other end of the alphabet series. Choice (C)

20. (A) $L^{+1} M^{+2} O^{-1} N$ (B) $P^{+1} Q^{+2} S^{-1} R$
(C) $S^{+1} T^{+3} W^{-1} V$ (D) $G^{+1} H^{+2} J^{-1} I$
All except (C) follow the same logic. Choice (C)

21. B = 2 & D = 4 i.e., 2 and its square. Similarly CI = 3, 9, DP = 4, 16. EV = 5, 22 is the only pair of letters that does not satisfy this criteria. Choice (D)

22. (A) $Z^{-1} Y^{-1} X$ (B) $L^{-1} K^{-1} J$ (C) $U^{-1} T^{-1} S$
(D) $L^{+1}M^{+1}N$
All except 'LMN' follow the same logic. Choice (D)

23. (A) $C^{+2} E^{+3} H$ (B) $I^{+2} K^{+2} M$ (C) $S^{+2} U^{+2} W$
(D) $O^{+2} Q^{+2} S$
All except CEH follow the same logic. Choice (A)

24. All the groups have a set of consecutive letters but only 'PQR' is a group which has no vowel in it. Choice (D)

25. All except '21' are prime numbers. Choice (D)

26. The sum of the digits in each set represents the position of the letter in the English alphabet.
1D3 $\Rightarrow$ 1 + 3 = 4 = D
2F4 $\Rightarrow$ 2 + 4 = 6 = F
5K6 $\Rightarrow$ 5 + 6 = 11 = K,
3H4 $\Rightarrow$ 3 + 4 = 7 = G but not H.
Hence 3H4 is the odd one. Choice (D)

27. Book is used to read.
Pen is used to write.
House is used to live.
But Table is not used to sit. Choice (C)

28. (A) $125 = (5)^3$ (B) $729 = (9)^3$ (C) $343 = (7)^3$
(D) $27 = (3)^3$
All except '729' are the cubes of prime numbers. Choice (B)

29. (A) 11 : 11 x 3 + 2 (B) 12 : 12 x 3 + 2
(C) 13 : 13 x 3 + 3 (D) 15 : 15 x 3 + 2
All except (C) follow the same logic. Choice (C)

30. In all the choices except (C), the letters O, U, S and R are used. Choice (C)

31. All the given numbers except (D) consist of consecutive digits in ascending order. Choice (D)

32. All except '33' are prime numbers. Choice (B)

33. (A) $E^{-2} C^{+1} D^{-2} B$ (B) $I^{-2} G^{+1} H^{-2} F$
(C) $X^{-2} V^{+1} W^{-2} U$ (D) $O^{+2} Q^{+1} R^{-2} P$
All except (D) follow the same logic. Choice (D)

34. (A) $L^{-2} J^{-3} G$ (B) $P^{-2} N^{-3} K$
(C) $S^{-2} Q^{-4} M$ (D) $D^{-2} B^{-3} Y$
All except SQM follow the same logic. Choice (C)

35. The letters in the words are given in jumbled form. When arranged in a proper order, we get the following
(A) GUITAR (B) SITAR
(C) FLUTE (D) RADIO
All except 'RADIO' are musical instruments. Choice (D)

36. The letters in the words are in jumbled order. We get the following words when they are arranged properly.
(A) CARROT (B) ONION
(C) POTATO (D) MANGO
All except 'MANGO' are vegetables. Choice (D)

37. In all the groups the first four letters are consecutive letters of they alphabet series. The fifth letter is a vowel.
This is followed in all the groups except in (B). Choice (B)

38. In all the pairs, the sum of the digit and the place value of the letter is equal to 5 except in E2. Choice (A)

39. All numbers except '256' are divisible by 6. Choice (C)

40. The letters in the words are jumbled. We get the following words when arranged properly.
(A) BULB (B) LANTERN
(C) LAMP (D) FAN
All except 'FAN' are the appliances used for getting light. Choice (D)

41. All except '34' are perfect square numbers. Choice (A)

42. (A) $139 = 5^3 + 14$ (B) $337 = (7)^3 - 6$
(C) $505 = (8)^3 - 7$ (D) $721 = (9)^3 - 8$
So, the numbers can be expressed as $n^3 - (n - 1)$.
All follow the same logic except 139. Choice (A)

43. The product of the digits in each set represents the position of the given letter in the English alphabet.
1D4 $\Rightarrow$ 1 X 4 = 4 = D
3L4 $\Rightarrow$ 3 X 4 = 12 = L
2P8 $\Rightarrow$ 2 X 8 = 16 = P
2J6 $\Rightarrow$ 2 X 6 = 12 = L but not J.
Hence 2J6 is the odd one. Choice (B)

44. $150 = 5^3 + 5^2$; $36 = 3^3 + 3^2$; $810 = 9^3 + 9^2$; $11^3 + 11^2 = 1452$ but not 1352
All the numbers except 1352 are written in the form of $N^3 + N^2$. Choice (D)

45. All except '115' are divisible by '31'. Choice (C)

46. All except 'Brown' are the constituent colours of the rainbow. Choice (C)

47. All except the word 'Two' have two vowels each. Choice (B)

48. All except 'Oat' are rhyming words. Choice (A)

49. All except 'Football' require a stick or a bat to hit the ball. Choice (B)

50. All except 'Dam' are natural water bodies. Choice (D)

Chapter – 10
(Symbols and Notations)

Exercise – 10

Solutions for questions 1 to 5:

Given that, in a certain code language,
'+' means '–'
'–' means '×'
'×' means '÷'
'÷' means '×'
Based on this, let us convert the given expressions.

1. $14 \times 2 - 6 + 10 + 4 \times 2$
becomes $14 \div 2 \times 6 - 10 - 4 \div 2$
$= 7 \times 6 - 10 - 2 = 30$. Choice (A)

2. $15 \div 5 + 15 \div 10 \times 2$
becomes $15 \times 5 - 15 \times 10 \div 2$
$= 15 \times 15 - 15 \times 15 = 0$. Choice (C)

3. $11 \div 15 \times 3 + 6 - 5$
becomes $11 \times 15 \div 3 - 6 \times 5$
$= 11 \times 5 - 30 = 25$. Choice (D)

4. $13 + 3 - 5 - 20 + 25$
becomes $13 - 3 \times 5 \times 20 - 25$
$= 13 - 300 - 25 = -312$. Choice (C)

5. 196 x 14 ÷ 25 x 5 + 225 x 15
becomes 196 ÷ 14 x 25 ÷ 5 – 225 ÷ 15
= 14 x 5 – 15 = 70 – 15 = 55. Choice (D)

Solutions for questions 6 to 15:

6. A V B = A + AB + B – 6
So, $7 \text{ V } 8 = 7 + 7 \times 8 + 8 - 6 = 65$. Choice (C)

7. $p \odot q = p^2 + q^2 + pq + q$
$1\ 0 \odot 5 = 10^2 + 5^2 + 10 \times 5 + 5 = 180$. Choice (A)

8. $C \Delta D = C^2 + CD + D^2 - (C + D)$
$7 \Delta 8 = 7^2 + 7 \times 8 + 8^2 - (7 + 8) = 154$. Choice (B)

9. $x \$ y = \sqrt{x} + \sqrt{y} + \sqrt{xy}$
$49 \$ 16 = \sqrt{49} + \sqrt{16} + \sqrt{49} \times 16 = 39$. Choice (D)

10. $a \circ b = 2a^b$
$5 \circ 2 = 2 \times 5^2 = 50$. Choice (D)

11. $5 @ 6 = 5^2 + 6^2 = 61$ and
$8 @ 10 = 8^2 + 10^2 = 164$
Hence $7 @ 9 = 7^2 + 9^2 = 130$. Choice (C)

12. $3 \neq 5 = 5^2 - 3^2 = 16$ and $7 \neq 5 = 5^2 - 7^2 = -24$
Hence, $10 \neq 11 = 11^2 - 10^2 = 21$. Choice (A)

13. $12 \neq 13 = (12 + 1)(13 + 1) = 182$
$17 \neq 8 = 162$
So, $15 \neq 16 = (15 + 1)(16 + 1) = 272$. Choice (C)

14. $3 > 2 = 3^3 + 2^2 = 31$ and $4 > 3 = 4^4 + 3^3 = 283$
Similarly, $1 > 2 = 1^1 + 2^2 = 5$. Choice (D)

15. $17 * 18 = (17 + 1)(18 - 1) = 306$
and $14 * 23 = (14 + 1)(23 - 1) = 330$
Hence, $10 * 12 = (10 + 1)(12 - 1) = 121$. Choice (A)

Solutions for questions 16 to 20:

16. The given sequence is as follows.
S T U ç ? J ↑ P Q 8 L 1 @ C 3 S ≠ A $ 6 2 B R £ 7 9 ⊙
(1) The series is $\odot^{-2}$, 7^{-4}, 2^{-6}, 3^{-8}, $\uparrow^{-10}$, $£^{-12}$ 1
Choice (A)

17. T^{+2} $ç^{+2}$ J^{+1}, $\uparrow^{+2}$ Q^{+2} L^{+1}, 1^{+2} C^{+2} 5^{+1}, $\neq^{+2}$ $\$^{+2}$ 2^{+1}, B^{+2} $£^{+2}$ 9,
Choice (B)

18. There are two such symbols which are immediately preceded by a letter and immediately followed by a digit. They are A $ 6 and R £ 7. Choice (C)

19. Eleventh element from the right is ≠. The seventh letter to the right of ≠ is £. Choice (C)

20. If the first ten elements from left are reversed then the given series transforms as follows.
8 Q P ↑ J ? ç U T S L 1 @ C 3 5 ≠ A # 6 2 B R £ 7 9 ⊙
Fifteenth letter from the right is @ and the tenth letter/element to the left of @ is P. Choice (D)

Solutions for questions 21 to 25:

Given that the symbol

'=' means ≠
'–' means <
'+' means ≥
'÷' means >
'×' means =

21. Statement
P + Q means P ≥ Q
Q ÷ R means Q > R
R – S means R < S
P ≥ Q > R and S > R
Conclusion I :
R × S means R = S is definitely false.
Conclusion II :
P ÷ R means P > R is true from the given statements.
Choice (B)

22. Statement :
L × M means L = M
L + N means L ≥ N
N – T means N < T
implies
L = M ≥ N and T > N

Conclusion I:
M – T means M < T is not definite from both the given statements.
Conclusion II:
L × M means L = N is also not definitely true from the given statements. Choice (C)

23. Statements :
A + B means A ≥ B
A × C means A = C
A = D means A ≠ D implies A < D or A > D.
Implies C = A ≥ B and A < D or A > D

Conclusion I:
B – C ⇒ B < C may be true
C > B is not definitely true and hence it does not follow.
Conclusion II:
B × C means B = C may be true
D < C
Hence, either B < C or B = C is definitely true.
Choice (D)

24. Statements :
K + R means K ≥ R
R ÷ P means R > P
P × Q means P = Q
Implies K ≥ R > P = Q
Conclusion I:
Q – K means Q < K is true.
Conclusion II:
P ÷ K means P > K is not true.
Choice (A)

25. Statements :
$G \times H$ means $G = H$
$G - J$ means $G < J$
$H \div K$ means $H > K$
Implies that
$J > G = H > K$

Conclusion I:
$K - J$ means $K < J$ is true.
Conclusion II:
$G - K$ means $G < K$ is not true. Choice (A)

Solutions for questions 26 to 30:

A @ B means $A \le B$
A + B means $A \ge B$
A © B means $A = B$
A $ B means $A < B$
A * B means $A > B$

26. Statement:
$F < E$; $C > R$; $E = C$; $R \le K$
Combining the above statements we get
$F < E = C < R \le K$
I. E > R, follows.
II. C > F, follows.
III. E < K, does not follow
IV. $F \ge K$; does not follow.
∴Only I and II follow. Choice (D)

27. Statement
$Z = J$; $I \ge N$; $W \le I$; $W > J$
Combining the above statements we get
$Z = J < W \le I \ge N$
I. I > Z, follows
II. I = N; does not follow.
III. Z = I; does not follow.
IV. J > N; does not follow.
∴ Only I follows. Choice (A)

28. Statement
$H \le A$; $D \le B$; $T > D$; $N \ge A$
Combining the above statements we get
$H \le A \le D \le B$, $T > D$
I. H = D; does not follow.
II. $T \le A$; does not follow.
III. $N \ge T$; does not follow.
IV. A < D; does not follow.
∴ None follows Choice (D)

29. Statement
$A > Q$; $H = A$; $I \ge H$; $T < L$
Combining the above statements we get
$Q < A = H \le L > T$
I. Q < H , follows.
II. A = L, does not follow.
III. H > T, does not follow.
IV. A < L does not follow.
II and IV are contradictory pairs
∴ Only I and either II or IV follow. Choice (D)

30. Statement
$S > T$; $M > A$; $M < E$; $A \ge T$
Combining the above statements we get
$S > T \le A < M < E$
I. $S \ge A$, does not follow.
II. E > T follows.
III. A < E follows
IV T > M, does not follow.
∴ Only II and III. Choice (B)

Solutions for questions 31 to 35:

31. The given statements are
$M \le N \le K > F$, $K = J < Q < P$.
By combining both the statements together, we get
$M \le N \le K = J < Q < P$ and $M \le N \le K > F$.
Conclusion I, K > P, does not follow.
Conclusion II, Q > M, follows.
conclusion III, M < F, does not follow.
Hence, only II follows. Choice (C)

32. The given statements are
$Z = Y < X \le W$, $Y = T \ge S \ge K$.
By combining both the statements, we get
$Z = Y = T \ge S \ge K$ and $Z = Y < X \le W$.
Conclusion I, Z > K, does not follow.
Conclusion II, Z = K, does not follow.
Conclusion III, Z < W, follows.
But conclusions I and II are contradicting each other.
Hence only III and either I or II follow. Choice (B)

33. The given statements are
$A \le M \le G > I$; $M > Y \ge K = Z$.
By combining both the statements , we get
$A \ge M > Y \ge K = Z$ and $A \le M \le G > I$.
Conclusion I, $A \ge Z$, does not follow.
Conclusion II, Y < A, does not follow.
Conclusion III, $M \le I$, does not follow.
Thus, none follows. Choice (D)

34. The given statement is
$E \le G < M > H = F > J \ge L$.
Conclusion I, M > J, follows.
Conclusion II, M > E, follows.
Conclusion III, M = E, does not follow.
Thus, conclusions I and II follow. Choice (D)

35. The given statement is
$P > Q \ge H = J < M \le F > S$
Conclusion I, $Q \ge J$, follows.
Conclusion II, F > J, follows.
Conclusion III, H < F, follows.
Thus, all conclusions follow. Choice (C)

Solutions for questions 36 to 40:

36. Given statements: $F \ge M = O > A \le U = S$; $Z > E = O < R$
By combining these two statements we get
$F \ge M = O = E < Z$ _____(i)
$F \ge O > A \le U = S$ _____(ii)
Conclusion I, $F \ge Z$, does not follow (from (i)).
Conclusion II, $S \le R$, does not follow (from (ii)).
Hence, neither I nor II follows. Choice (C)

37. Given statements: $H \le C \le R = I > U$; $N > J > I = V > C$
By combining these two statements we get
$H \le C \le R = I < J < N$ _____(i)
$U < I = V > C$ _____(ii)
Conclusion I, N > H follows (from (i))
Conclusion II, C < U, does not follow (from (ii))
Hence, only I follows. Choice (C)

38. Given statements: $C > H \ge P = O \le R \le A$; $D \le S = O \ge A$
By combining these two statements we get
$H \ge P = O = S \ge D$
Conclusion I, H > D, does not follow.
Conclusion II, D = H, does not follow.
But the conclusions I and II contradict each other.
Hence either I or II follows. Choice (B)

39. Given statements:
$P = A > R = M = I < T$; $D \ge S = I < H$
By combining these two statements we get
$P = A > R = M = I = S \le D$ _____(i)
$S = I < T$ _____(ii)
Conclusion I, $D \ge P$, does not follow from (i).
Conclusion II, S < T, follows from (ii).
Hence only II follows. Choice (A)

40. Given statements: $P < R \le E = M < A$; $S \ge W = A \ge N$
By combining these two statements we get
$P < R \le E = M < A = W \le S$
Conclusion I, P < S, follows.
Conclusion II, S > M, follows.
Hence both I and II follow. Choice (D)

Solutions for questions 41 to 45:

41. $5 \# 7 \$ 4 = (5 \times 7) - 4 = 35 - 4$
$\therefore x = 31$
$31 \rightarrow 5 \leftarrow 3 = 31 \times 3 + 5$
$= 93 + 5 = 98.$ Choice (A)

42. $40 * 3 @ 3 = 40$
$= 40 - 9 = 31$
$\therefore P = 31$
Now,
$6 \# 6 \$ 31 = 6 \times 6 - 31$
$= 36 - 31 = 5.$ Choice (B)

43. $7 \uparrow 2 \downarrow 3 = \frac{7+2}{3} = 3$
$\therefore a = 3$
Now $3 \rightarrow 3 \leftarrow 5 = 5 \times 3 + 3 = 18.$ Choice (C)

44. $4 \rightarrow 4 \leftarrow 9 = 9 \times 4 + 4 = 36 + 4$
$\therefore b = 40$
Now, $40 \& 5\ 2\ 8 = 40 - (5 \times 8)$
$= 40 - 40 = 0.$ Choice (A)

45. $12 \uparrow 24 \downarrow 6 = 12 + 24 \div 6 = 36 \div 6$
$\therefore y = 6$
Now, $7 \# 6 \$ 3 = 7 \times 3 - 3$
$= 42 - 3 = 39.$ Choice (D)

Solutions for questions 46 to 48:

46. In order to make the given expression 'A > J' true, the symbols which are to be placed in the place of question mark are =, >, =, >, ≥. Then the expression becomes,
A = X > E = U > J ≥ S. Choice (C)

47. In order to make the given expression 'L > P' true, the elements which are to be placed in the place of question marks are L, M, N, O, P and Q. Then the expression becomes,
L > M = N > O = P < Q. Choice (B)

48. In the expression B > D = G ≥ K > T, the given expression 'B > K' as well as 'T < D' are true. Choice (D)

Solutions for questions 49:

'@' means '≤'

'%' means '≥'

'#' means '='

'$' means '<'

'&' means '>'

49. In the expression 'O % P & K # T $ H @ Q'→'O ≥ P > K = T < H ≤ Q ', the given expressions
'T % O' →'T ≥ O' and 'Q $ K'→'Q < K' definitely false.
Choice (B)

Solutions for questions 50:

50. After interchanging = and ÷ the given expression becomes
$64 \div 8 + 8 = 16$
$8 + 8 = 16$
$16 = 16.$ Choice (B)

Chapter – 11
(Clocks)

Exercise – 11

Solutions for questions 1 to 25:

1. In 1 hour the hour-hand moves 360/12 = 30°.
Hence, in 10 minutes it cover 30°/6 = 5° Choice (D)

2. The hour hand moves 10° in 20 minutes. In 20 minutes the minute-hand moves 20/60 x 360 = 120°. Choice (D)

3. In 50 seconds the second hand covers 300°.
In 60 seconds the minute hand covers 300/60 = 6°.
Hence, in 50 seconds it covers 5°. Choice (B)

4. The time in the mirror is 4 hours 20 minutes.
The actual time = (12 – 4 hours 20 minutes)
= 7 hours 40 minutes. Choice (C)

5. The actual time given in the mirror is 7 hours 15 minutes. The time shown by this clock when seen in the mirror is (12 – 7 hours 15 minutes)
= 4 hours 45 minutes. Choice (D)

6. At 4 hours 20 minutes the angle between the two hands is
$\theta = 30\ h - 11/2\ m$
$\Rightarrow \theta = 30 \times 4 - 11/2 \times 20$
$\Rightarrow \theta = (120 - 110) = 10°$ Choice (B)

7. At 4 hrs 30 min, the hour hand is in between 4 and 5 and the minute hand is at 6. It is given that the minute hand points towards South which implies that the minute hand point towards South-east. Choice (A)

8. The angle between the hands at 3 hours 25 minutes is
$\theta = 11/2\ m - 30\ h$
(where θ = angle, m = minutes and h = hours)
Here, h = 3 and m = 25
$\theta = 11/2 \times 25 - 30 \times 3$
$\Rightarrow \theta = \frac{275-180}{2}$
$\Rightarrow \theta = 95/2 = 47½°.$ Choice (D)

9. The angle between the two hands of a clock at 2 hours 35 minutes is $\theta = 11/2\ m - 30\ h$, where h = 2 and m = 35
$\theta = 11/2 \times 35 - 30 \times 2$
$\Rightarrow \theta = \frac{385-120}{2} \Rightarrow \theta = 265/2 = 132^{1}/_{2}°$
Choice (C)

10. $\theta = 11/2\ m - 30h$
Here it is given that θ = 0 and h = 6
$11/2\ m = 30h$
$\Rightarrow 11m = 60\ h \Rightarrow m = \frac{60 \times 6}{11}$
$m = 360/11 = 32\ 8/11$ min past 6.
The two hands of the clock are together at $32^{8}/_{11}$ minutes past 6, between 6 and 7 O'clock. Choice (A)

11. It is given that θ = 180°, h = 3
$\theta = 11/2\ m - 30h$
$11/2\ m = \theta + 30h$
$\Rightarrow 11m = 2(180 + 30 \times 3) \Rightarrow m = 540/11$
$\Rightarrow m = 49^{1}/_{11}$ minutes past 3.
At $49^{1}/_{11}$ minutes past 3, the two hands of the clock are in opposite directions. Choice (D)

12. $\theta = 30\ h - 11/2\ m$, where h = 7, m = 20
$\theta = 30 \times 7 - 11/2 \times 20$
$\theta = 210 - 110 \Rightarrow \theta = 100°$ Choice (C)

13. In this it is given that
$\theta = 70°$, h = 7
$\theta = 11/2\ m - 30\ h$
$\Rightarrow 11/2\ m = \theta + 30\ h$
$11\ m = 2(70 + 30 \times 7)$
$m = 560/11 = 50^{10}/_{11}$ min past 7.
At 7 hours $50^{10}/_{11}$ minutes, the angle between the two hands is 70°.
When $\theta = 30\ h - 11/2\ m$
$11/2\ m = 30\ h - \theta$
$\Rightarrow m = \frac{2(30 \times 7 - 70)}{11}$
$m = 280/11 = 25^{5}/_{11}$ min past 7.
Choice (D)

14. $\theta = 11/2\ m - 30\ h$
$11/2\ m = \theta + 30\ h$
$\Rightarrow m = \frac{2(50 + 30 \times 3)}{11}$
$m = 280/11$ = At $25^{5}/_{11}$ min past 3, the two hands of the clock are 50° apart.
$\theta = 30\ h - 11/2\ m$
$11/2\ m = 30\ h - \theta$
$\Rightarrow m = \frac{2(90 - 50)}{11}$
$\Rightarrow m = 80/11$ = At $7^{3}/_{11}$ min past 3 the two hands of the clock are 50° apart. Choice (B)

15. $\theta = 11/2\ m - 30\ h$
$11/2\ m = \theta + 30\ h$
$11\ m = 2(62 + 30 \times 5)$
$m = {}^{424}/_{11}$ = At $38^{6}/_{11}$ min past 5 O'clock the two hands of the clock are 62° apart.
$\theta = 30\ h - 11/2\ m \Rightarrow 11/2\ m = 30\ h - \theta$
$\Rightarrow 11m = 2(30 \times 5 - 62)$
$\Rightarrow m = 176/11$ = At 16 minutes past 5 O'clock, the two hands of the clock are 62° apart. Choice (D)

16. Time from 6 a.m. Monday to 7 p.m. on Thursday = 85 hours.
The watch gains (4 + 6) = 10 minutes in 85 hours
∴ The watch gains 4 minutes in [4/10 x 85] = 34 hours. (shows correct time)
34 hours = 1 day 10 hours.
1 day 10 hours from 6 a.m. Monday
= 4:00 p.m. Tuesday. Choice (B)

17. In a correct clock, the hands of a clock coincide every $65^{5}/_{11}$ minutes. But in this case they are together again after 66 minutes, hence clock loses time.
Loss in 66 min = $(66 - 65^{5}/_{11}) = 6/11$ minutes.
Loss in 24 hours = $6/11 \times \frac{60 \times 24}{66}$
$= 1440/121 = 11^{109}/_{121}$
The clock loses $11^{109}/_{121}$ minutes in 24 hours.
Choice (C)

18. In a correct clock, the hands of a clock coincide every $65^{5}/_{11}$ minutes. But in this case both the hands are together again after 62 minutes, hence the clock gains time.
Gain in 62 minutes = $(65^{5}/_{11} - 62) = 3\ 5/11$ min gain.
Gain in 24 hours = 38/11 x 60 x 24 / 62
$= \frac{19 \times 60 \times 24}{11 \times 31} = 80\frac{80}{341}$
So the clock gains $80^{80}/_{341}$ minutes in 24 hours.
Choice (A)

19. Time from 12 noon Monday to 6 p.m. the next day = 30 hours
The watch gains (5 + 10) = 15 minutes in 30 hours.
∴ The watch gains 5 minutes in 5/15 x 30 = 10 hours.
10 hours from 12 noon = 10 p.m.
The clock shows the correct time at 10 p.m. of the same day. Choice (D)

20. Time from 3 p.m. Sunday to 9 p.m. Tuesday = 54 hours. The watch loses (5 + 10) = 15 minutes in 54 hours.
∴ The watch loses 5 min in 5/15 x 54 = 18 hours
18 hours from 3 p.m. Sunday is 9 a.m. on Monday, which is when the clock shows the correct time. Choice (D)

21. Time from 8 a.m. on one day to 4 p.m., the next day = 32 hours.
24 hours 10 minutes of this clock = 24 hours of the correct clock.
$24^{10}/_{60} = 145/6$ hrs of this clock = 24 hours of the correct clock. 32 hours of this clock = 32 x 6 x 24 / 145
= 31 hours 47 minutes approximately.
∴ The correct time is 31 hours 47 minutes from 8 a.m. = 3 hours 47 minutes the next day, afternoon.
Choice (B)

22. Time from 10 a.m. today to 5 p.m. the next day = 31 hours.
24 hours 12 minutes of this clock = 24 hours of the correct clock.
$24^{12}/_{60} = 24^{1}/_{5} = 121/5$ hours of this clock = 24 hours of the correct clock.
31 hours of this clock = 31 x 5/121 x 24
= 30 hours 45 minutes approximately.
∴ The correct time is 30 hours 45 minutes after 10 a.m.
= 4 hours 45 minutes approximately. Choice (C)

23. Time from 4 a.m. on 6th of this month to 6 p.m. on 10th of this month = 110 hours.
The watch loses (12 + 20) = 32 minutes.
The watch loses 32 minutes in 110 hours.
∴ The watch loses 12 minutes in 12/32 x 110
= 41 hours 15 minutes
Hence 41 hours 15 minutes from 4 a.m. on 6th is 9:15 p.m. on 7th. Choice (A)

24. Difference in minutes between the two clocks in one hour = 3 minutes.
Number of hours from 8 a.m. to 12 noon on that day
= 4 hours.
The two clocks differ by = 3 x 4 = 12 minutes.
Choice (D)

25. Difference in minutes between the two clocks in one hour = 1 minute
Number of hours between 12 noon to 8 p.m. on that day = 8 hours.
In 8 hours, one of the clocks gains 8 minutes and shows the time as 8:08 p.m. The other clock which gains 2 minutes in 1 hour shows the time as 8:16 p.m.
Choice (C)

Chapter – 12
(Calendars)

Exercise – 12

Solutions for questions 1 to 25:

1. It is given that 22nd April, 1982 was a Thursday.
Number of days from 22nd April 1982 to 3rd November 1982.
Month: April + May + June + July + August + September + October + November
In each month number of odd days :
1 + 3 + 2 + 3 + 3 + 2 + 3 + 3 = 6 odd days
6th day after Thursday is Wednesday. Choice (B)

2. Number of odd days from 30th June, 1989 to 30th June, 1993 are five.
Number of days from 30th June, 1993 to 17th September, are
Month : July + August + September
Odd days : 3 + 3 + 3 = 9
Number of odd days = 9 + 5 =14 = 0 odd days
Hence, 17th September 1993 was a Friday.
Choice (D)

3. It is given that 26th February, 2014 is a Wednesday.
26th February, 2017, is four days after Wednesday, i.e., on Sunday.
Number of odd days from 26th February, 2017 to 14th July, 2017 = 2 + 3 + 2 + 3 + 2 + 0 = 12 odd days
Number of odd days in 12 days = 12/7 = 5 odd days
5th day after Sunday is Friday.
Choice (A)

4. Number of days from 10th April, 1963 to 23rd August, 1963
Month: April + May + June + July + August
Days: 20 + 31 + 30 + 31 + 23 = 135
Number of odd days in 135 days = 135/7 = 2 days
23rd August 1963 is 2 days to Wednesday i.e., Friday
Number of odd days form 23rd August 1963 to 23rd August 1959 are five odd days.
Hence, 23rd August 1959 is five days back to Friday is Sunday. Choice (A)

5. Number of days from 4th August 1996 to 12th April 1992
Month: August + July + June + May + April
Days: 4 + 31 + 30 + 31 + 19 = 135 days
135/7 = 2 odd days
Hence, 12th April 1996 is two days before Sunday, i.e., Friday.
Number of odd days from 12th April 1996 to 12th April 1992 is 5 odd days.
5 days before Friday is Sunday.
So, 12th April 1992 was a Sunday. Choice (D)

6. Number of odd days from 1st January, 2012 to1st January, 2016 are 5. 5th day after Sunday is Friday.
Choice (A)

7. Number of days from 31st January 1995 to 30th July, 1995.
Month : Feb + Mar + Apr + May + Jun + July
Odd days : 0 + 3 + 2 + 3 + 2 + 2 = 12 days
Number of odd days in 12 days = 12/7 = 5 odd days
5 odd days after Tuesday is Sunday.
Number of odd days from 30th July, 1995 to 30th July, 1993 are 2.
2nd day before Sunday is Friday.
Choice (C)

8. 20th January, 2000 is a Thursday.
20th January, 1997 is 3 days before Thursday, i.e., Monday.
Number of days from 20th January, 1997 to 26th February, 1997 are
Month: January + February
Days: 11 + 26 = 37 = 2 odd days
2nd day after Monday is Wednesday.
Choice (C)

9. 2008 is a leap year.
The number of odd day from 10th January to 1st December of 2008.
Jan + Feb + Mar + Apr + May + Jun + Jul + Aug + Sep + Oct + Nov + Dec (1st)
21(0) + 1 + 3 + 2 + 3 + 2 + 3 + 3 + 2 + 3 + 2 + 1 = 4
∴ the week on first December is = Monday + 4 days = Friday.
Hence, 3rd December is on Sunday.
∴ 3, 10, 17, 24, 31 are Sundays in the December.
Choice (D)

10. It is given that 19th March in a particular year is a Sunday.
Number of days from 19th March to 23rd September in a particular year are :
Month : March + April + May + June + July + August + September.
Odd days : 5 + 2 + 3 + 2 + 3 + 3 + 2 = 20 odd days
Number of odd days in 20 days = 20 ÷ 7 = 6 odd days
Hence, 23rd September of that year is not a Sunday, hence it is not a holiday. Choice (B)

11. Number of odd days in 426 days
= 426/7 = 60 complete weeks + 6 odd days.
6th day after Sunday is a Saturday. Choice (D)

12. Whether the given year is a leap year or a non-leap year, is not given, hence the answer cannot be determined.
Choice (D)

13. Odd days from 2005-2008: 1 + 1 + 1+ 2
Hence, 1st January 2009 is 5 days after Saturday, i.e., Thursday. Choice (A)

14. It is given that 1st January, 2012 is a Saturday.
Odd days from 2012 to 2018: 2 + 1 + 1 + 1 + 2 + 1
8 days means 1 odd day.
1 day after Saturday is Sunday. Choice (C)

15. The number of odd days from 23rd February 2011 to 25th March 2013 can be calculated as follows:
24th Feb 2011 to 23rd Feb 2012 – 1
24th Feb 2012 to 23rd Feb 2013 – 2
24th Feb 2013 to 25 March 2013 – 5 + 25 = 30 = 2
∴ The day on 25 March 2013 is Tuesday + (1 + 2 + 2) days = Sunday. Choice (D)

16. The person met the boss 15 days ago and he said that he would give the salary after 36 days i.e. after 36 – 15 = 21 days from the day referred as today.
∴ The required day is = Wednesday + 0(21 days) = Wednesday. Choice (D)

17. Number of odd days in 382 days
⇒ 382/7 = 54 complete weeks + 4 odd days
Choice (D)

18. Number of days from 3rd April, 1995 to 1st October, 1995
Month: April + May + June + July + August + September + October
Odd days = 6 + 3 + 2 + 3 + 3 + 2 + 1
= 20 days = 6 odd days
6th day after Monday is a Sunday.
Hence, 1st October, 1995 is a Sunday.
I can meet my friend on the 1st, 8th, 15th, 22nd, 29th of October. Choice (B)

19. A century year is a leap year only if it is divisible by 400. In the given years, only 2800 is divisible by 400. Hence, 2800 is a leap year. Choice (C)

20. As the year starts and ends with Sunday means the given year is a non leap year. As the one odd day is a Sunday, there will be 53 Sundays in the year. Choice (C)

21. I met my friend (26 + 10) = 36 days before a Wednesday.
The number odd days = 1
One day before Wednesday = Tuesday. Choice (C)

22. The required day is (26 – 15) = 11 days before a Sunday.
The number of odd days = 4
4 days before a Sunday is Wednesday. Choice (A)

23. Number of days in that calendar year = 436
Number of days in a week = 9
Hence, the number of odd days = 436/9
= 48 complete weeks + 4 odd days. Choice (D)

24. The required day is (55 – 23) = 32 days after Monday. Number of odd days = 4.
4 days after Monday is = Friday. Choice (D)

25. Republic day i.e. 26th January is on Thursday.
It is not known that whether the year is a leap year or not.
∴ The number of odd days from 26th January to 15th August = 5 + 0/1 + 3 + 2 + 3 + 2 + 3 + 1 = 5/6
If it is a non leap year day of the week on 15th August = Thursday + 5 days = Tuesday
If it is a leap year day of the week on 15th August = Thursday + 6 days = Wednesday. Choice (D)

Chapter – 13
(Number and Letter Series)

Exercise – 13

Solutions for questions 1 to 15:

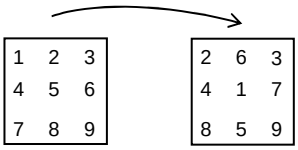
1. In each figure, the elements are increasing and the bottom row is substituted by new symbols.
∴ The appropriate answer figure is (D).
Choice (D)

2. The elements are rotated by 90° in CW order and the element which is at the border position is shifted by $\frac{1}{2}$ a side in anticlockwise direction.
∴ The appropriate answer figure is (C). Choice (C)

3. Each element is shifted by one side in the clockwise direction. The element at the bottom left corner is taken into the central position. Whenever the central element is disappears in the next figure, a new element appears at the end.
∴ The appropriate answer figure is (A). Choice (A)

4. The in side element at the top left is rotated by 90° in CW, 135° in CW, 90° in CW, 135° in CW, 90° CW and 135° in CW respectively.
The element at the bottom right is rotated by 90° in ACW, 135° ACW, 90° ACW, 135° ACW, 90° in ACW and 135° in ACW order respectively.
∴ The appropriate answer figure is (B). Choice (B)

5. The elements in each previous figure are rearranged to get the next figure as shown below.

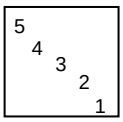


Previous figure Next figure

∴ The appropriate answer figure is (C).
Choice (C)

6. The element is shifted by 1 block, 2 blocks, 3 blocks, 4 blocks, and 5 blocks in the clockwise direction to get the appropriate answer figure (B). Choice (B)

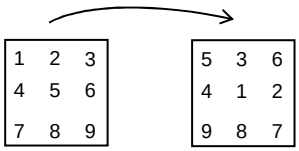
7. Let the elements in each figure be



The string A elements is rotated by 45° ACW. From the first figure to the second figure, the 1st and the 2nd elements are swapped. From the second figure to the third figure, the 2nd and the 3rd elements are swapped. Similarly, the 3rd and the 4th, the 4th and the 5th, and the 5th and the 1st elements are swapped cyclically in the remaining figures.
∴ The appropriate answer figure is (C).
Choice (C)

8. The number of lines in each figure are 1, 4, 9, 16, 25, 36 respectively.
∴ The appropriate answer figure is (D).
Choice (D)

9. The elements in the first figure are rearranged as shown below to get the next figure.

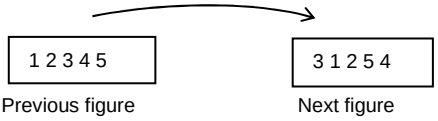


Previous figure Next figure

A similar logic is applied from the third to the fourth and from the fifth to get the answer figure.
∴ The appropriate answer figure is (B).
Choice (B)

10. The elements are shifted to adjacent blocks and opposite blocks alternately and a new element is appearing in each figure.
∴ The appropriate answer figure is (D).
Choice (D)

11. The elements in each previous figure are rearranged as shown below to get the next figure.

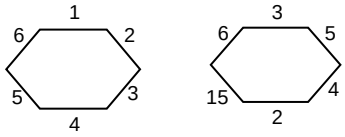


Previous figure Next figure

∴ The appropriate answer figure is (C).
Choice (C)

12. Each leaf in the previous figure is rotated by 45° ACW and a new leaf is added to get the next figure.
∴ The appropriate answer figure is (A).
Choice (A)

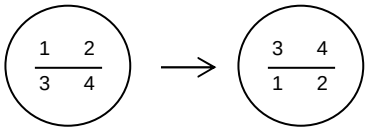
13. The elements in the previous figure are rearranged as shown below to get the next figure.



Previous figure Next figure

∴ The appropriate answer figure is (A).
Choice (A)

14. The elements in each figure are rearranged as shown below to get the next figure and each element is rotated by 180°.



∴ The appropriate answer figure is (C).
Choice (C)

15. In each figure, the triangle is getting inverted and is increased by one.
∴ The appropriate answer figure is (C).
Choice (C)

Solutions for questions 16 to 20:

In each pair, the relation from the elements in the second frame to the elements in the first frame is as follows.

16. In the first pair, from the second frame to the first frame the elements are shifting as follows. The element at the centre is shifted to the top right. The second element from the center is shifted to the bottom left. The third element from the centre is shifted to the top right and the top most element is shifted to the bottom right. Similar pattern is followed in figure (D). Choice (D)

17. Here the partly shaded petals are rotating by 90° in anti clockwise direction and the shaded part becomes unshaded and unshaded part becomes shaded.
The unshaded petal is rotating in clockwise direction by 135°. Answer figure (D) is related in same way to frame (4) of problem figure. Choice (D)

18. Here the elements in the first column are rotating by 90° in clockwise direction and the elements in the second column are rotating by 90° in anticlockwise direction.
Answer figure (D) follows same pattern with the given unpaired figure. Choice (D)

19. The elements pointing outward in the first figure are pointing inwards in the second figure of first set of problem figures. Similarly, the elements pointing inwards are pointing outwards in the second figure.
Answer figure (C) bears a similar relationship with the first figure of second set of problem figures.
Choice (C)

20. In the first pair, from the first frame to the second frame the element ★ is shifting to the top right, < is shifting to the bottom left > is shifted to bottom right and + is shifted to the top left corners. The elements '∪' and 'O' are shifted to the center. Similarly pattern is followed in figure (D).
Choice (D)

Solutions for questions 21 to 25:

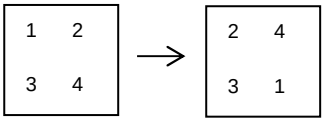
21. In the first pair, top two elements interchange Positions. Elements at the centre and bottom shift to the next places in the clockwise direction, whereas one is replace by a new elements. Choice (C)

22. The element in the first figure rotates by 90° in c lockwise direction. The shade in the middle petal is reduced by half along the length and the shade in the each of the other two petal shifts its position to the other side of the petal.
Choice (D)

23. The second figure is obtained by taking the mirror images of the top row elements and water images of the bottom row elements. A similar relation is found in the fifth answer figure. Choice (D)

24. The two elements at the top interchanged their positions. The remaining four elements changed positions cyclically among themselves. The entire figure is rotated by 45° in a clockwise direction. A similar relation is found in the first answer figure. Choice (A)

25. The internal elements are changing to their next figure in anticlockwise direction. Let us number the external elements to observe their movement.



The similar pattern is observed in figure (B).
Choice (B)

Solutions for questions 26 to 30:

26. Except in Choice (D), all the other figures are horizontally symmetrical. Choice (D)

27. In all the figures except Choice (C), three of the elements are pointing towards in one direction and only one element is pointing in the opposite direction.
Choice (C)

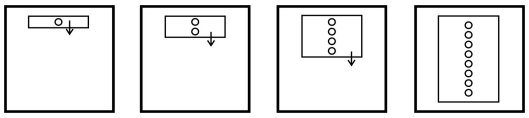
28. In each figure the element at the right is 180° rot ation of the element at the left. The element at the bottom is mirror image of the element at the left. This pattern is not followed in the first figure. Choice (A)

29. Except in figure (D), in all the other figures both the arrows are rotating in the same direction.
Choice (D)

30. The 90° angle between the two arrows in the straig ht lines is in clock wise direction, but in (D) it is anti-clockwise.
Choice (D)

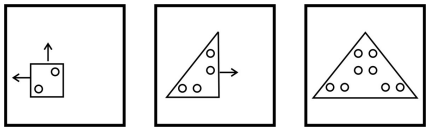
Solutions for questions 31 to 34:

31. When the paper is unfolded, then the pattern is as shown below.



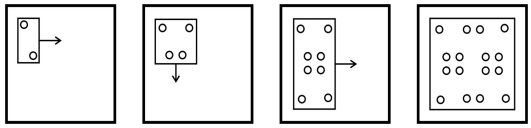
Hence, the answer figure is (D).
Choice (D)

32. When the paper is unfolded, then the pattern is as shown below.



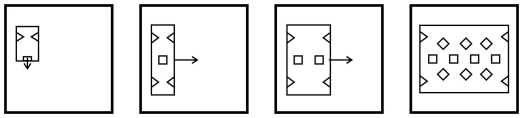
Hence, the answer figure is (B).
Choice (B)

33. When the paper is unfolded, then the pattern is as shown below.



Hence, the answer figure is (B).
Choice (B)

34. When the paper is unfolded, then the pattern is as shown below.



Hence, the answer figure is (B). Choice (B)

Solutions for questions 35 to 37:

35. Choice (A) is the mirror image of the given figure.
Choice (A)

36. Choice (C) is the mirror image of the given figure.
Choice (C)

37. Choice (A) is the mirror image of the given figure.
Choice (A)

Solutions for questions 38 to 40:

38. In the problem figure, one dot appears in a region common to all the three figures. Such a region is present only in the answer figure (A).
Choice (A)

39. In the problem figure, one dot appears in a region common to the triangle and the rhombus only. Such a region is present only in the answer figure (B).
Choice (B)

40. In the problem figure, one dot appears in a region common to D shape and the rectangle only. Such a region is present only in the answer figure (A).
Choice (A)

Chapter – 14
(Decision Making)
Exercise – 14

Solutions for questions 1 to 8:

Each case in the question is verified as shown in the table given below, which consists of the basic criteria for selection.

Q. No.	Name	(i) Indian Citizen	(ii) Graduate ≥ 60% marks	(iii) M.B.A. or Diploma in marketing ≥ 55% marks	(iv) ≥ 2 yrs exp as marketing manager in FMCG company	(v) Age ≥ 25 years ≤ 30 years as on 1-1-2005	(P) MBA ≥ 65% ≥ 3 and years experience	(Q) ≥5 yrs exp as marketing mgr	(R) M.B.A. from reputed institution with ≥ 60% marks	Decision
1.	Sravan	✓	✓	✓	✓	✓				selected
2.	Ashank	✓	✓	–	✓	✓		✓		selected
3.	Vijay Varma	–	✓	✓	✓	✓				data inadequate
4.	Pranay	✓	–	✓	✓	✓	✓			data inadequate
5.	Sri Vidya	✓	✓	✓	×	✓			×	not selected
6.	Anirudh	✓	✓	✓	×	✓			✓	selected as Probationary Marketing officer
7.	Rahul	–	✓	✓	✓	✓				data inadequate
8.	Sourav	✓	✓	✓	✓	✓				selected

'✓' Refers to the condition satisfied, '×' refers condition not satisfied and '– ' refers to data inadequate.

1. As Sravan met all the above said conditions he is selected. Choice (A)

2. In Ashank's case, there is no information about condition (3), but he satisfies the alternate condition. Hence, he is selected. Choice (A)

3. As we do not know whether Vijay Varma is an Indian citizen or not, data is inadequate. Choice (D)

4. In Pranay's case, his marks in graduation are not given. Choice (D)

5. As Sri Vidya does not satisfy both condition (iv) and alternate condition (R), she is not selected. Choice (E)

6. Anirudh is does not satisfying condition (iv) but he satisfies the alternate condition (R). Hence, he is considered for the post of a probationary marketing officer. Choice (C)

7. We cannot determine whether Rahul is an Indian citizen or not. Hence, data is inadequate. Choice (D)

8. As Sourav satisfies all the above conditions he is selected. Choice (A)

Solutions for questions 9 to 16:

Each case in the question is verified shown in the table given below, which consists of the basic criteria for the selection.

Q.No	Name	(i) Grad ≥ 60% in Fashion tech	(ii) ≤ 30 yrs as on 1.6.04	(iii) ≥ 50% in entrance exam	(iv) pay 50,000	(P) ≥ 50% in grad and 1 lakh	(Q) < 35 yrs and ≥ 3 yrs exp.	(R) > 75% in grad	(S) pay 5000 per month	Decision
9.	Vivek	–	✓	✓	✓					data inadequate
10.	Ratur	✓	✓	✓	✓					admitted
11.	D'Souza	×	✓	✓	✓	✓				referred to Chairman
12.	Ujjal	✓	×	✓	✓		✓			referred to Principal
13.	Girish	–	✓	✓	✓					data inadequate
14.	Sri Vidya	✓	✓	–	×	×			×	not admitted
15.	Karithikeyan	×	✓	✓	✓	✓				referred to Chairman
16.	Akash Deep	✓	✓	✓	✓					admitted

'✓' refers to condition satisfied.'×' refers to condition not satisfied and'–' refers to data inadequate

9. As we do not know whether he got 60% or not, data is inadequate. Choice (D)

10. As Ratur fulfills all the conditions he is admitted. Choice (A)

11. As D'Souza is does not fulfill condition (i) but she fulfills the alternate condition (P), she is referred to the chairman. Choice (B)

12. As Ujjal does not fulfill condition (ii) but he fulfills the alternate condition (Q), he is referred to the Principal. Choice (C)

13. In Girish's case whether he did his Graduation in Fashion Technology or not is unknown. Choice (D)

14. As Sri Vidya cannot pay the fee, she is not selected. Choice (E)

15. As Karthikeyan is willing to pay ₹1 lakh, he is referred to the Chairman. Choice (B)

16. As Akash Deep fulfills all the above conditions he is selected. Choice (A)

Solutions for questions 17 to 24:

Q. No.	Name	(i) Engneer / diploma holder	(ii) Engineer ≥ 60%/ Diploma holder ≥70%	(iii) Exp in hardware engg and networking	(iv) Trblshoot desktops/palm -tops/Laptops	(v) ≥ 2 yrs sim exp in BPO	(vi) excell comm skills in English	(vii) Willing to work in shifts	(P) 5 yrs exp	(Q) consistent acad ≥75%	Decision
17.	Asra Das	✓	✓	✓	✓	✓	✓	✓			selected
18.	Sanjay	✓	✓	–	✓	✓	✓	✓			data inadequate
19.	Akash Menon	✓	✓	✓	✓	x	✓	✓		✓	selected as Trainee Help desk Engineer
20.	Ravi	✓	–	✓	✓	✓	✓	✓			data inadequate
21.	Smriti	✓	×	✓	✓	✓	✓	✓	✓		referred to COO
22.	Gargi	✓	✓	✓	✓	×	✓	✓			Data inadequate
23.	Garima	✓	✓	✓	✓	✓	✓	✓		–	Selected
24.	Chauhan	✓	✓	✓	✓	–	✓	✓			data inadequate

'✓' refers to condition satisfied, 'x' refers to condition not satisfied, '–' refers to data inadequate.

17. As Asra Jain fulfills all the given conditions she is selected. Choice (A)

18. As we do not know whether Sanjay has an experience in networking or not, hence, data is inadequate. Choice (E)

19. Akash Menon, does not fulfill condition (5), but he fulfills the alternate condition (Q). Hence he is selected as a Trainee Helpdesk Engineer. Choice (D)

20. Whether the first class is 60% or not is not given, hence, data inadequate. Choice (E)

21. Smriti does not fulfill condition (2), but she fulfills the alternate condition (P). Hence, she is referred to the COO. Choice (C)

22. Gargi does not fulfill condition (v). But information to check condition (Q) is not available. Hence, data inadequate. Choice (E)

23. As Garima fulfills all the conditions she is selected. Choice (A)

24. Whether Chauhan has similar experience in a B.P.O is not given, data is inadequate. Choice (E)

Solutions for questions 25 to 32:

Each case in the question is verified as shown in the table given below, which consists of the basic criteria for the selection.

Q. No.	Name	Conditions (i) Master's degree in social sciences/ Economics/ development studies	(ii) ≥ 8 years work experience in development field	(iii) at least 5 years of experience in research	(iv) excellent understanding of macro economic policies.	(v) be self motivated and a team player	(P) Except (iii) but have ≥ 5 years experience as a project manager is referred to the Director	(Q) Except (iv) but have a Doctoral degree in Social Service is referred to the chairman	Decision
25.	Vikas	✓	✓	✓	✓	✓			selected
26.	Pankaj Pandey	✓	✓	×	×	✓	✓		referred to the director
27.	Yoginder	✓	✓	×	✓	✓	×		not selected
28.	ShilpiBali	✓	✓	✓	–	✓			data inadequate
29.	Parimala	✓	✓	✓	×	✓		✓	referred to the chairman
30.	Rajesh	✓	✓	✓	✓	–			data inadequate
31.	Shruthi	✓	✓	×	×	✓			not selected
32.	Joseph	✓	✓	✓	–	✓		✓	referred to chairman

'✓' refers to the conditions satisfied, 'x' refers to the conditions not satisfied, '–' refers to the data inadequate.

25. As Vikash fulfills all the conditions he is selected. Choice (A)

26. In Pankaj Pandey's case, condition (iii) is not satisfied, but he fulfills the alternate condition (P). Hence, he is referred to the Director.
Choice (C)

27. As Yoginder does not fulfill condition (iii) and its alternate condition, he is rejected.
Choice (E)

28. Shilpibali has an understanding of microeconomic policies but we do not know whether she has an understanding in macroeconomic policies. Hence data inadequate. Choice (D)

29. In Parimala's case, condition (iv) is not satisfied, but the alternate condition (Q) is fulfilled. Hence, she is referred to the Chairman. Choice (B)

30. In Rajesh's case no information is known about condition (5). Hence, data inadequate. Choice (D)

31. As two basic conditions are not satisfied, she is rejected. Choice (E)

32. As condition (iv) is not satisfied, but the alternate condition (B) is fulfilled. Hence, Joseph is referred to the Chairman. Choice (B)

Solutions for questions 33 to 40:

Each case in the question is verified as shown in the table given below, which consists of the basic criteria for selection.

Question Number	Given Number	(i) At least 6 digit	(ii) At least 2 even digits	(iii) Prime digit at unit place	(iv) No two digits are same	Number classification
			[P] Starts with an even digit	[Q] Odd number	[R] No two adjacent digit are same	
33.	4687322	✓	✓	✓	× [×]	Waste number
34.	3456789	✓	✓	× [✓]	✓	Difficult number
35.	138642	✓	✓	✓	✓	Sensible number
36.	291735	✓	× [✓]	✓	✓	Soft number
37.	85613	×	✓	✓	✓	Waste number
38.	9713864	✓	✓	× [×]	✓	Waste number
39.	2976813	✓	✓	✓	✓	Sensible number
40.	5796723	✓	✓	✓	× [✓]	Complicated number

33. Criteria (d) is not satisfied and its alternate criteria (iii) is about satisfied. Hence, it is classified as Waste number.
Choice (E)

34. Criteria (c) is not satisfied but its alternate criteria (ii) is satisfied. Hence, it is classified as Difficult number.
Choice (C)

35. All the basic criteria are satisfied. Hence, the number is classified as Sensible number.
Choice (A)

36. Criteria (b) is not satisfied but its alternate criteria (i) is satisfied. Hence, it is classified as Soft number.
Choice (B)

37. Condition (a) is not satisfied hence, the number is classified as waste number. Choice (E)

38. Criteria (c) is not satisfied and its alternate criteria is also not satisfied. Hence, the number is classified as Waste number. Choice (E)

39. All the basic criteria are satisfied. Hence, the number is classified as Sensible number. Choice (A)

40. Criteria (d) is not satisfied but its alternate criteria (iii) is satisfied. Hence, the number is classified as Complicated number. Choice (D)

Solutions for questions 41 to 45:

41. 1 = Yes; 2 = No data.
Hence, the given date is inadequate to allot the Hotel.
Choice (E)

42. 1 = Yes; 2 = Yes; 3 = Yes; 8 = No.
Hence, no Hotel is allotted to organize the Training Programme. Choice (C)

43. 1 = Yes; 2 = Yes; 3 = Yes; 8 = Yes.
Hence, the proramme is to be organized in Hotel Taj.
Choice (D)

44. 1 = Yes; 2 = Yes; 3= No; 4 = Yes; 5 = Yes; 6 = Yes.
Hence, the proramme is to be organized in Hotel Saucy.
Choice (A)

45. 1 = Yes; 2 = Yes; 3 = No; 4 = Yes; 5 = No.
Hence, No hotel is allotted to organize the Training Programme. Choice (B)