

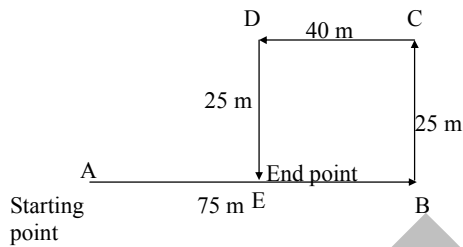
**NTSE STAGE II**  
**CODE: 13 –15**  
**MAT**  
**HINTS & SOLUTIONS**

1. 1  
 Sol. As per observation

2. 3  
 Sol. Since Ranveet always tells truth so Mehar and Ranveet both have a goat and Mehar is lying.

3. 1  
 Sol. Shaded rectangle moves half position toward right, circle moves 1 position in clockwise direction, In 1<sup>st</sup> row arrow moves half position in anti clockwise direction, in 2<sup>nd</sup> row it remains same and in 3<sup>rd</sup> row again half position in anticlockwise direction.

4. 2  
 Sol.



Starting point  
 $AE = AB - EB$   
 $= AB - DC$   
 $= 75\text{m} - 40\text{m}$   
 $= 35\text{m}$

5. 4  
 Sol. III and IV conclusion logically following from given statements.

6. 1 or 4  
 Sol.  $(2^2 + 2^2 + 4^2 + 3^2) - (2 + 2 + 4 + 3) = 22$   
 $(3^3 + 2^2 + 5^2 + 4^2) - (3 + 2 + 5 + 4) = 40$   
 $(4^2 + 3^2 + 6^2 + 5^2) - (4 + 3 + 6 + 5) = 68$

OR

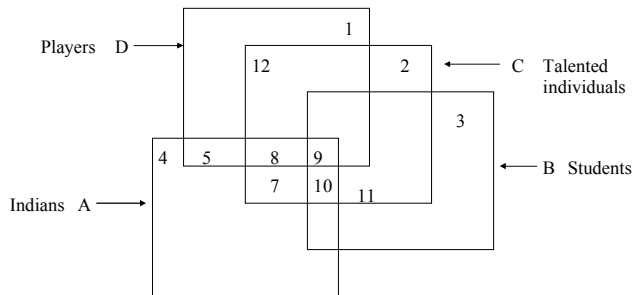
$$\frac{(3 + 2 \times 4) \times 4}{2} = 22$$

$$\frac{(4 + 3 \times 4) \times 5}{2} = 40$$

$$\frac{(5 + 4 \times 4) \times 6}{3} = 42$$

7. 3

Sol.



Number common to A, B and C but not D which is 10.

8. 2

Sol. Number common to C, A and D which are 8 and 9 i.e, 17.

9. 4

Sol. Numbers common to C, A and B, which are 9 and 10 i.e, 19

10. 2

Sol.  $\Rightarrow (11 + 5 + x + y) - (15 + 10 + 5 + y) = 10$   
 $\Rightarrow 16 + x + y - 30 - y = 10$   
 $\Rightarrow 16 + x = 40$   
 $\Rightarrow x = 24$   
 $\therefore$  only B = x = 24

11. 3

Sol.  $x + y + 5 = 63$  ..... i  
 and  $(x + y + 5 + 11) = 2(15 + 10 + 5 + y)$  ..... ii  
 $\Rightarrow 63 + 11 = 60 + 2y$  (from i and ii)  
 $\Rightarrow 2y = 14$   
 $\Rightarrow y = 7$   
 $\therefore x = 51$

12. 1

Sol. The logical argument is only I.

13. 4

Sol. Number of trees and apples remains 4 and 5 respectively in each row and column.

14. 1

Sol. As per observation

15. 3

Sol. Lets assume person A goes uphill and on the same day person B comes down hill. There will surely be a point where both of them will meet at a certain time. Similarly, if person A comes down hill on the next day, he will be at the same place at the same time on the next day.

16. 3

Sol. Minute hand over takes hour hand 11 times in 12 hours.

17. 1

Sol. 

M	E	N	T	A	L
↓+6	↓+8	↓+10	↓-14	↓+14	↓-10
S	M	X	F	O	B

Similarly,

A	B	I	L	I	T	Y
↓+6	↓+8	↓+10	↓-14	↓+14	↓-10	↓-8
G	J	S	X	W	J	Q

18. 1  
Sol. J A I S A L M E R  
J A I L S A R M E

Similarly

H Y D E R A B A D  
H Y D A E R D B A

19. 3  
Sol. A Z, G T, M N, S H, Y B  
+6 +6 +6 +6 +6  
-6 -6 -6 -6

20. 1  
Sol. J 14, L 16, N 18, P 20, R 22  
+2 +2 +2 +2 +2

21. 3  
Sol. A C C, B D H, C E O, D F X  
+1 +1 +1 +1 +1  
+5 +7 +9

22. 1  
Sol. 64, 57, 66, 55, 69, 52  
+2 +3  
-2 -3

23. 1  
Sol. As per observation

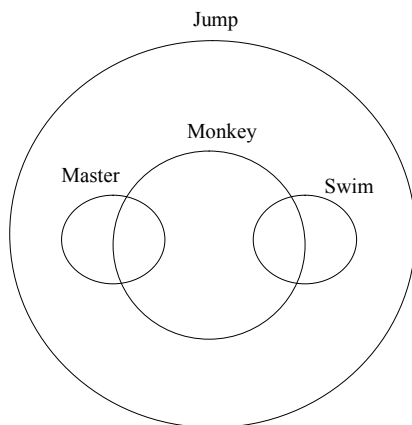
24. 3  
 Sol. Clay → Bricks → Wall → Room ⇒ House  
 B E A D C

25. 3  
 Sol. As per observation

26. 3  
 Sol. As per observation.

27. 1  
 Sol. As per observation.

28. 2  
 Sol.



So, second statement is a ....

29. 4  
 Sol. Neither of the assumption are implicit as the statement is only concerned with population below poverty line of urban area last year → so, on assumption of rural area poverty line.

30. 2  
 Sol. Since one premise is particular, the conclusion must be particular and should not contain the middle term. Thus only II follows.

31. 3  
 Sol. In 24 hours the watch is gaining 10 minutes.

So, in one hour the watch will gain  $\frac{10}{24}$  min

∴ in 5 hours it will gain  $\frac{10 \times 5}{24}$  min

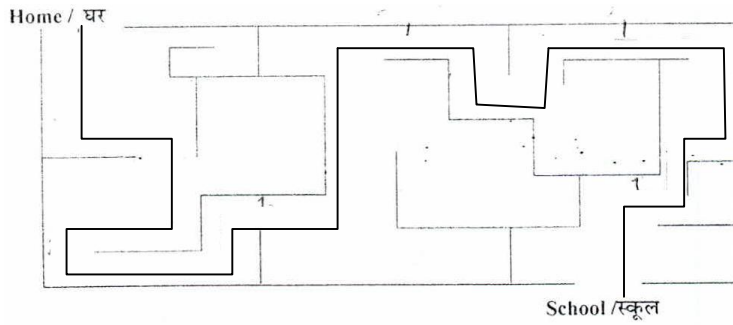
By solving the equation the correct time by this watch is 2:02:05 am.

32. 3  
 Sol. It shows students can take history and geography together or only geography so II and III statement follows.

33. 4  
 Sol. It is going  $\frac{4}{8}$  km northwards and  $\frac{3}{8}$  km westwards

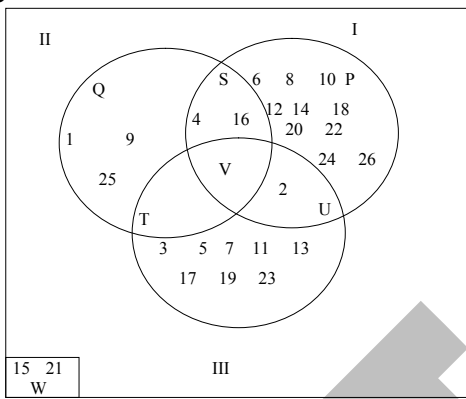
So, distance between starting point and ending point is  $\frac{5}{8}$  km.

34. 3  
Sol.

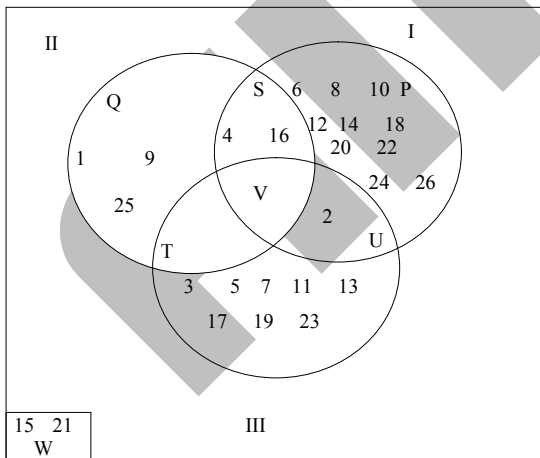


35. 1  
Sol. The shaded region including rectangle, trapezium and pentagon which is region at married male who are teacher.

36. 3  
Sol.

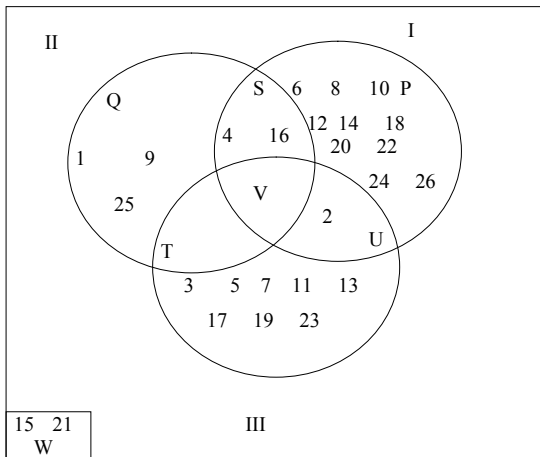


37. 1  
Sol.

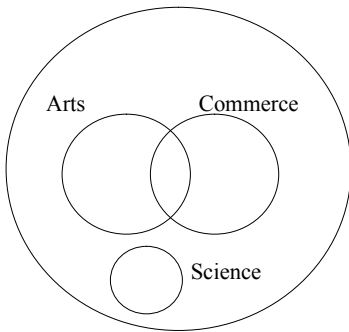


38. 3

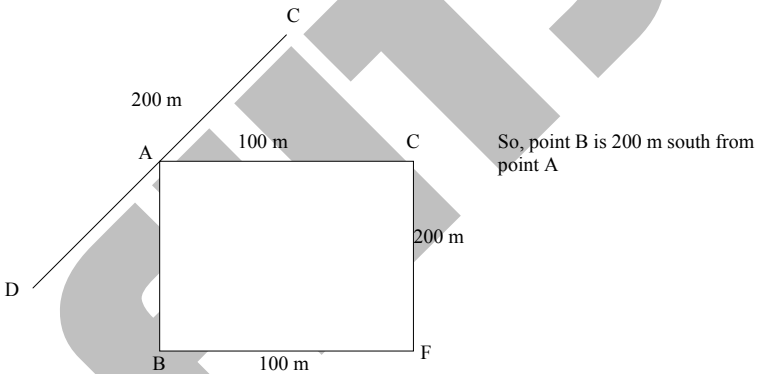
Sol.



39. Sol. 1



40. Sol. 4



41. Sol. 1  
 Let A has Rs  $5x$ , B has Rs  $3x$  and C has Rs  $x$   
 So, using statement I,  $5x - x = 60$   
 $x = 15$   
 So, B has Rs 45.

42. Sol. 4  
 Let the cost of each pen is  $x$   
 The cost of each pencil is  $y$   
 So, using first statement the equation  $6x + 5y = 30$   
 Using IInd statement

The new price of each pen =  $\frac{3}{5}x$

The price of each pencil =  $\frac{3y}{5}$

So, using IInd equation =  $\frac{12 \times 3x}{5} + \frac{10 \times 34}{5} = 36$  ....(i)  $6x + 5y = 30$ ...(ii)

So, even by using both statement answer cannot be found.

43. 4

Sol. Ratio of saving cannot be found as no link between expenditure and income has been given.

44. 3

Sol. From statement II we find that  
CP of A = SP of A – Profit after selling A

$$\text{CP of A} = \frac{4}{5} \text{ of SP of A}$$

From statement I  
CP of A = SP of B

$$\frac{4}{5} \text{ SP of A} = \text{SP of B}$$

So, ratio of selling price of A and SP of B can be found using both the statement.

45. 4

Sol. STAR = 50, CIRCUS = 65

Adding position of alphabets from back side we will get the required value.

So, PLANET → 11 + 15 + 26 + 13 + 22 + 7 = 94

46. 4

Sol. At 6pm the hour hand points towards north but in the given question it is pointing towards south.

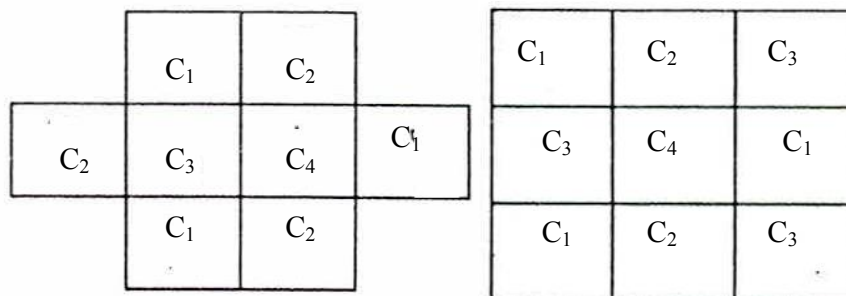
At 9:15 the minute hand point towards east but here it will be pointing towards west.

47. 3

Sol. In the evening the shadow is towards east. So person (Sanjiv) facing north will have shadow in their right. So, Rajni will be facing in South direction.

48. 2

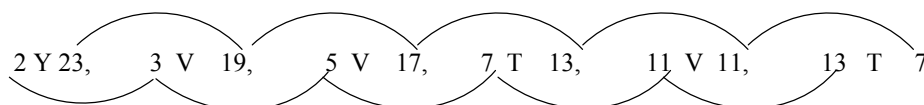
Sol.



C<sub>1</sub>, C<sub>2</sub>, C<sub>3</sub> & C<sub>4</sub> represents minimum different colours. That are required to fulfill the given condition.

49. 1

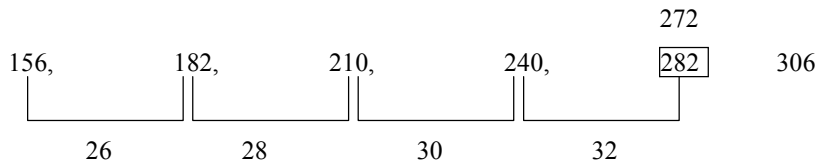
Sol.



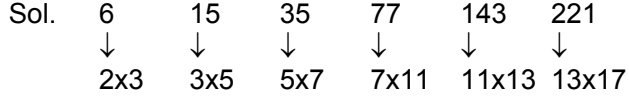
By adding the two prime number we get the position of the alphabet which is in between the number.

50. 3

Sol.



51. 3.



52. 2

Sol. Pairs → (5, 9), (4, 6), (7, 8)

$$(5, 9) \Rightarrow (5)^2 + (9)^2$$

$$25 + 81 = 106$$

$$(4, 6) \Rightarrow (4)^2 + (6)^2$$

$$16 + 36 = 52$$

$$(7, 8) \Rightarrow (7)^2 + (8)^2$$

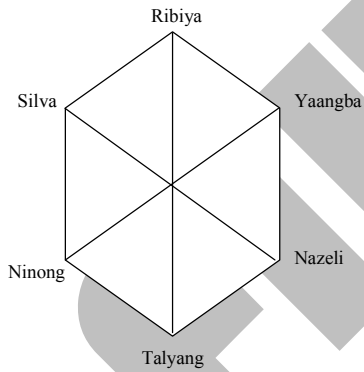
$$49 + 64 = 113$$

53. 2

Sol. a nttan / anttan / anttan

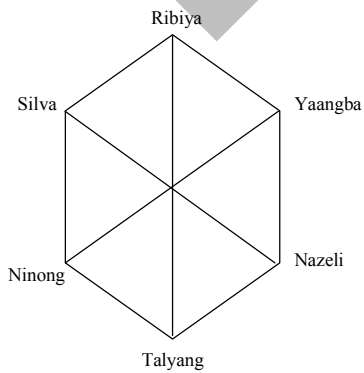
54. 3

Sol.



55. 4

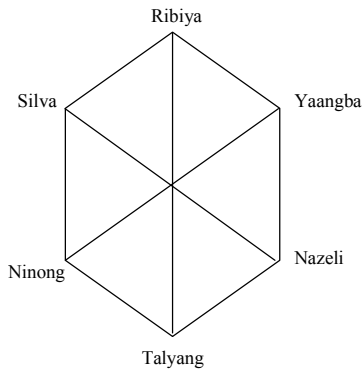
Sol.



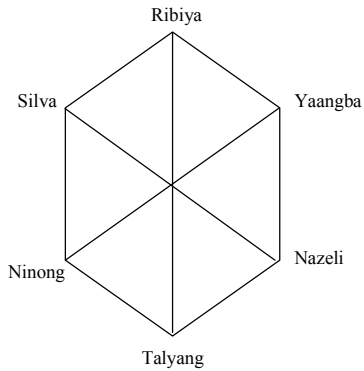
56. 1



Sol.



57. 4  
Sol.



58. 3  
Sol. By observation

59. 1  
Sol.  $5 \times 4 = 20$   
 $3 \times 8 = 24$   
 $9 \times 4 = 36$

60. 4  
Sol.

E	13	8	$\Rightarrow 5 + 8 \rightarrow 13 \rightarrow M$
N	15	1	$\Rightarrow 14 + 1 \rightarrow 15 \rightarrow O$
I	13	4	$\Rightarrow 9 + 4 \rightarrow 13 \rightarrow M$

61. 4  
Sol.

$6 + 4 + 4 = 14 \rightarrow N$	6	4	4	7	$\rightarrow 4 + 7 + 1 = 12 \rightarrow L$
	4	N	L	1	
$5 + 6 + 10 = 21 \rightarrow U$	5	U	Q	1	$\rightarrow 1 + 2 + 14 = 17 \rightarrow Q$
	6	10	14	2	

62. 2

Sol.  $(10 \times 5) + (10 \times 3) + (3 \times 5) = 95$   
 $(3 \times 6) + (3 \times 2) + (2 \times 6) = 36$   
 $(\boxed{3} \times 4) + (4 \times 8) + (8 \times \boxed{3}) = 68$

63.

1

Sol.

$13 + 11 + 8 + 18 = 50$   
 $18 + 13 + 8 + 11 = 50$   
 $11 + 21 + 9 + 9 = 50$   
 $9 + 8 + 10 + 23 = 50$   
 $\Rightarrow 13 + m + 10 + 23 = 50$   
 $m = 50 - 46$   
 $m = 4$

64. 3 or 4

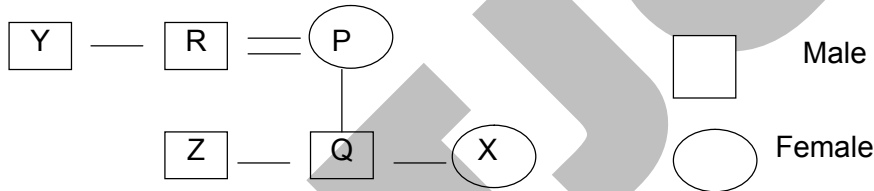
Sol.

According to Manushi  $\rightarrow 11, 12, 13, 14, 15, 16$   
 According to Vishakha  $\rightarrow 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27$   
 Common date  $\rightarrow 15^{\text{th}}$  &  $16^{\text{th}}$  July  
 If  $10^{\text{th}}$  July  $\rightarrow$  Thursday  
 So,  $15^{\text{th}}$  July  $\rightarrow$  Tuesday  
 and  $16^{\text{th}}$  July  $\rightarrow$  Wednesday

65.

2

Sol.



Clearly, Q, X and Z are children of P

66.

1

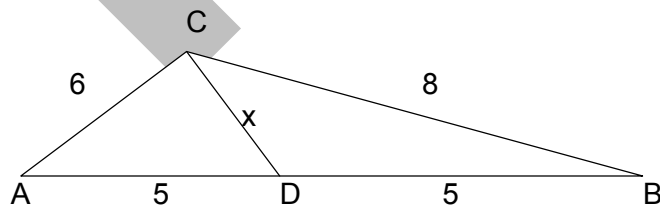
Sol.

On  $1^{\text{st}}$  March dusk watch gains = 30 sec  
 On  $2^{\text{nd}}$  march dawn watch loses = 20 sec  
 So on  $2^{\text{nd}}$  morning watch gains = 10 sec  
 Similarly, on  $28^{\text{th}}$  morning watch gains = 270 sec  
 So, on  $28^{\text{th}}$  March dusk watch gains =  $270 + 30 = 300$  sec  
 = 5 min

67.

2

Sol.



It's a midpoint of right angle triangle.  
 So,  $CD = 5$

68.

1

Sol.

$m + n = o + p \dots I$   
 $m + q = p + n \dots II$   
 $2p < m + q \dots III$   
 $2m > o + n \dots IV$   
 From eq. II and III

$2p < p + n$   
 $\Rightarrow p < n \dots V$   
 From eq. I if  $n > p$  so  $o > m \dots IV$   
 From eq. IV and VI if  $o > m$  so  $m > n$   
 So from eq V, Vi and VII  $o > m > n > p > q$

69. 2  
Sol. By observation

70. 4  
Sol. 6 opposite 3  
1 opposite 2  
4 opposite 5

71. 1  
Sol.  $20 \div 4 \times 12 - 6 + 11$   
After change  $\rightarrow 20 + 4 - 12 \div 6 \times 11$   
 $= 20 + 4 - 2 \times 11$   
 $= 24 - 22$   
 $= 2$

72. 2  
Sol. By observation

73. 4  
Sol. Sum of the number are in descending order  
 $5 + 6 + 4 = 15$   
 $6 + 5 + 3 = 14$   
 $3 + 6 + 4 = 13$   
 $4 + 2 + 6 = 12$   
 $5 + 4 + 2 = 11$   
 By option 4  
 $1 + 4 + 5 = 10$

74. 1  
Sol. There are two common number 6 and 2  
So 3 is opposite to 1.

75. 1  
Sol.  $(96 \div 128) + 64 = 2$   
Option (1)  
 $(64 + 128) \div 96 = 2$   
 $192 \div 96 = 2$   
 $2 = 2$

76. 2  
Sol.  $6x = 5y \Rightarrow x = \frac{5}{6}y$      $2y > 3z \Rightarrow y > \frac{3}{2}z$

$$\frac{5}{6}y > \frac{3}{2} \times \frac{5}{6}z \Rightarrow x > \frac{5}{4}z$$

$$4x > 5z$$

$$4x ? 5z$$

77. 2  
Sol.  $30 \div 2 + 3 \times 6 - 5$

$$= 15 + 18 - 5$$

$$= 28$$

78. 4  
 Sol. Step I – Fliped right + 1 circle  
 Step II – Fliped left  
 Step III – Fliped right + 1 circle  
 Step IV - Fliped left  
 Step V – Fliped right + 1 circle

79. 1  
 Sol. Total number of  $\Delta$  - total number of O and vice versa in 1<sup>st</sup>

$$6 \Delta - 4 O = 2 \Delta$$

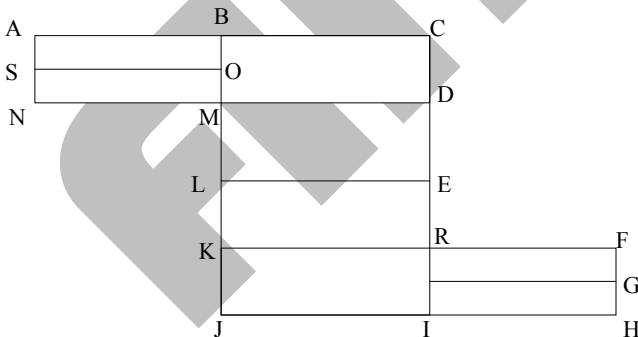
$$4 O - 3 \Delta = 1 O$$

$$\therefore 7 \Delta - 4 O = 3 \Delta$$

80. 1  
 Sol.  $3 \times 8 \div 4 + 2 - 5 = (7 + 12 - 1) \div 6$   
 $6 + 2 - 5 \quad (19 - 1) \div 6$   
 $\Rightarrow 3 \quad 18 \div 6 = 3$   
 $) \div \Rightarrow ] \downarrow$

81. 4  
 Sol. By observation.

82. 1  
 Sol.



ABMN, BCDM, MDEL, LERK, RIJK, RFHI, ABOS, SOMN, RFGP, PGHI, BCEL, MDRK, LEIJ, BCRK, MDIJ, ACDN, KFHJ, BCIJ.

83. 2  
 Sol. From option 2  $\rightarrow$  1# 3@ 6@ 4\$ 4#  
 P E A C E

84. 3  
 Sol. By observation.

85. 4

Sol.

	5	3	
2	8	1	7
	6	4	

86. 4

Sol. Let number of supervisor be x  
 Total number of legs  $\rightarrow 50 \times 2 + 45 \times 4 + 8 \times 4 + 2x$   
 $= 312 + 2x$   
 Total number of heads  $\rightarrow 50 + 45 + 8 + x$   
 $= 103 + x$   
 $\Rightarrow 312 + 2x - (103 + x) = 224$   
 $x = 15$

87. 2

Sol. For first letter in upper case  $\rightarrow$  coded with first letter in upper case.

Busy  $\rightarrow$  Cpu

Crows  $\rightarrow$  hup

Only option 2 matches.

88. 2

Sol. From I and II  
 Flower Red  $\rightarrow$  Sa Ma  
 From I and IV  
 Red White  $\rightarrow$  Ma Ra  
 For Blue  $\rightarrow$  Ga is remained

89. 2

Sol. one digit number  $\rightarrow 1$  to  $9 \rightarrow 9$   
 Two digit number  $\rightarrow 10$  to  $99 \rightarrow 90 \times 2 = 180$   
 three digit number  $\rightarrow 100$  to  $199 \rightarrow 100 \times 3 = 300$   
 total digit  $= 9 + 180 + 300 = 489$

90. 4

Sol.

Study very hard  $\rightarrow$  6 7 8

hard work pays  $\rightarrow$  3 4 7

Study and work  $\rightarrow$  2 4 6

91. 2

Sol.

T	O	M	E	A	R	E
@	\$	*	?	I	&	?

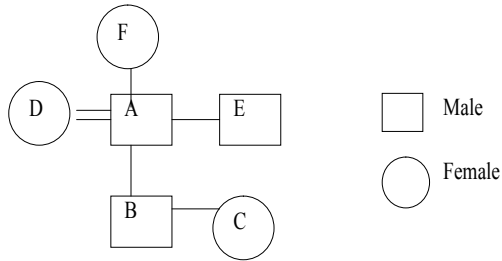
$\Rightarrow$

R	E	M	O	T	E
&	?	*	\$	@	?

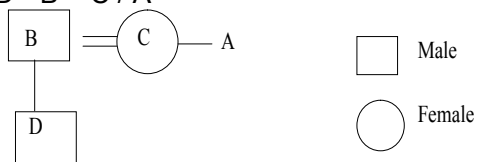
Direct coding

92. 2  
 Sol.  $23 + 26 - 7 = 42$   
 $11 + 15 - 7 = 19$   
 $32 + 16 - 7 = 41$

93. 3  
 Sol.

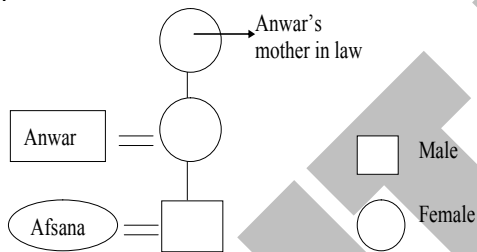


94. 2  
 Sol.  $D * B + C / A$



D is the nephew of A.

95. 4  
 Sol.



Clearly, Anwar is father of her husband i.e., father in law.

96. 4

Sol. Average speed =  $\frac{\text{total distance}}{\text{total time}}$   
 $= \frac{60 \times 1 + 80 \times 2 + 100 \times 1 + 40 \times 1}{5} = \frac{360}{5} = 72 \text{ km/h}$

97. 4

Sol. 23% of sports  $\rightarrow$  1150 students  
 Total students =  $\frac{1150}{23} \times 100 = 5000$   
 Reading  $\rightarrow$  9% of 5000 = 450

98. 2

Sol. Total students =  $\frac{1150}{23} \times 100 = 5000$

99. 4

Sol. From F  
 Boys  $\rightarrow$  14% of 27300 = 3822  
 Girls  $\rightarrow$  21% of 24700 = 5187

Ratio  $\rightarrow$  5187 : 3822 i.e, 19:14

100. 2  
Sol. Hina wants to go either Goa or Odisha.  
Harbhajan cannot go Goa.  
So, only Odisha suits all.

**FITJEE**