SSC CHSL - CHT1 : 180340 GRAND TEST
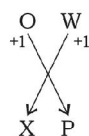## HINTS AND SOLUTIONS
### ANSWER KEY

| 1	(3)	26	(1)	51	(4)	76	(2)
2	(1)	27	(3)	52	(1)	77	(3)
3	(3)	28	(4)	53	(4)	78	(3)
4	(3)	29	(1)	54	(4)	79	(3)
5	(3)	30	(2)	55	(2)	80	(2)
6	(2)	31	(4)	56	(1)	81	(3)
7	(1)	32	(3)	57	(2)	82	(3)
8	(3)	33	(1)	58	(3)	83	(4)
9	(3)	34	(4)	59	(3)	84	(2)
10	(3)	35	(1)	60	(4)	85	(4)
11	(4)	36	(4)	61	(3)	86	(1)
12	(3)	37	(4)	62	(1)	87	(2)
13	(3)	38	(4)	63	(3)	88	(1)
14	(2)	39	(3)	64	(2)	89	(2)
15	(1)	40	(3)	65	(2)	90	(1)
16	(3)	41	(2)	66	(3)	91	(4)
17	(4)	42	(2)	67	(3)	92	(1)
18	(1)	43	(2)	68	(2)	93	(2)
19	(4)	44	(3)	69	(4)	94	(1)
20	(2)	45	(3)	70	(3)	95	(1)
21	(3)	46	(1)	71	(2)	96	(3)
22	(2)	47	(1)	72	(2)	97	(1)
23	(1)	48	(2)	73	(3)	98	(3)
24	(3)	49	(1)	74	(2)	99	(1)
25	(1)	50	(4)	75	(1)	100	(4)

1. (3) Each term in the series is the product of the digits of the preceding term.
So, missing term $= 1 \times 8 = 8$.

2. (1) The doze is to sleep lightly, and to tiptoe is to walk lightly.

3. (3) As,

S H A D   O W
(with $+1$ arrows)
E B I T   X P

Similarly,

D E C C   A N
(with $+1$ arrows)
D D F E   **O B**
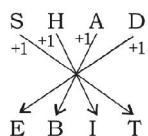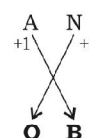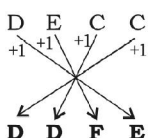
4. (3) $74 \Rightarrow 74 - (\text{Reverse } (47)) = 74 - 47 = 27$
$86 \Rightarrow 86 - (\text{Reverse } (68)) = 86 - 68 = 18$

5. (3) $64 = 8*8$
$144 = 12*12$
$256 = 16*16$
$400 = 20*20$

6. (2) (1) $150 = 5^3 + 5^2$ (2) $14 = 2^3 + 6$
(3) $252 = 6^3 + 6^2$ (4) $80 = 4^3 + 4^2$

7. (1) Blood is the only non-drinkable liquid.

8. (3) All except Scallop live in shells.

9. (3) Each term in the series is obtained by adding 1 to the square of the preceding term.
So, missing term $= (101)^2 + 1 = 10202$.

10. (3) The terms of the given series are numbers formed by joining together consecutive odd numbers in order i.e. 1 and 3, 3 and 5, 5 and 7, 7 and 9, 9 and 11, ...
So, missing term = number formed by joining 11 and 13 = 1113.

11. (4) $(1)^2 + (5)^2 + (4)^2 + (3)^2 = 51 \times 10 = 510$
and $(3)^2 + (4)^2 + (6)^2 + (2)^2 = 65 \times 10 = 650$
Similarly, $(3)^2 + (1)^2 + (2)^2 + (8)^2 = 78 \times 10 = 780$

12. (3) The colour of the human blood is 'red' and as given, 'red' is called 'yellow'. So, the colour of human blood is 'yellow'

13. (3)

14. (2) Using the correct symbols, we have:
Given expression
$= 30 \div 2 + 3 \times 6 - 5 = 15 + 18 - 5 = 28$

15. (1) Let d and s represent the number of daughters and sons respectively.
Then, we have :
$d - 1 = s$ and $2(s - 1) = d$.
Solving these two equations, we get: d = 4, s = 3
So, total no. of children $= 3 + 4 = 7$

16. (3) One side of the cube $= \sqrt[3]{64}$
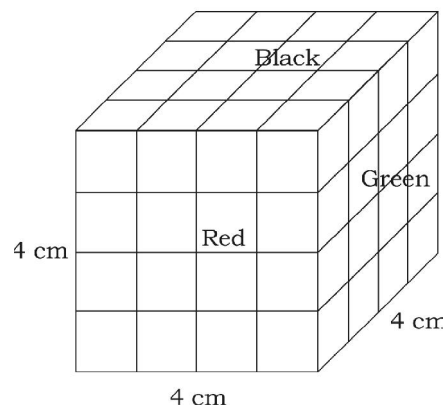
Number of small cubes having no face coloured
$= (x - 2)^3 = (4 - 2)^3 = 8$

17. (4) Number of small cubes having only one face coloured
$= 4$ from each face $= 4 \times 6 = 24$

18. (1) I directly follows from the statement and so, I is implicit. Also, the statement is a suggestion and does not tell about a government policy or its position of funds. So, II is not implicit.

19. (4) Number of cuts made to cut a roll into 10 pieces = 9. Therefore required number of rolls

$$= \frac{45 \times 24}{9} = 120.$$

20. (2)

```
K ←——Brother——— Y
                  |
              Father
                  |
                  ↓
Z ←——Sister——— I
```

So, the relation (K + Y × Z – I) shows that 'I' is the niece of 'K'.

21. (3) A is the father of X and Y is the sister of X. So, Y is the daughter of A

22. (2)

23. (1) The upper element is converted to an element similar to the lower elements and each one of the lower elements converted to an element similar to the upper element.

24. (3) 1, 3, 5 are figures having partially or completely curved boundaries.
2, 6, 8 are all triangles.
4, 7, 9 are all quadrilaterals.

25. (1) Clearly, the smallest such number is 3.

```
    D ⌐
      |
  D ⌐ ┤
    | |
  D ⌐ ┘
    |
    L D
```

'D' represents the 'ducks'.

51. (4) Let the present age of Mr. Suman = 10x + y yrs.
Age of his wife = 10y + x yrs.

$$\Rightarrow \frac{1}{11}(10x + y + 10y + x) = (10x + y) - (10y + x)$$

$$\Rightarrow \frac{x}{y} = \frac{10}{8} = \frac{5}{4}$$

∴ x : y = 5 : 4
Age of Mr. Suman = (10 × 5 + 4) = 54 yrs.
Age of wife of Mr. Suman = (10 × 4 + 5) = 45 yrs.
Required ratio = 54 : 45 = 6 : 5.

52. (1) Assume if he travelled the whole journey on foot then distance travelled in 13 hours = 13 × 5 = 65 km
Similarly by cycle = 13 × 7 = 91 km

```
Foot        Cycle
65           91
      ╲    ╱
        (79)
      ╱    ╲
12           14
 6     :     7 → 13
```

$$\boxed{\frac{T_1}{T_1} = \frac{6}{7}} \begin{array}{l} \rightarrow \text{foot} \\ \rightarrow \text{cycle} = 49 \text{Km} \end{array}$$

53. (4) Total CP = ` 32

$$\text{Total SP} = \frac{12}{12} \times 18 + \frac{4}{12} \times 6 = 18 + 2 = ` 20$$

$$\text{Loss \%} = \left(\frac{32 - 20}{32} \right) \times 100 = 37.5\%$$

54. (4)

DB = DC = 3 cm

$$AD = \sqrt{AB^2 - BD^2} = \sqrt{6^2 - 3^2}$$

$$= \sqrt{36 - 9} = \sqrt{27} = 3\sqrt{3} \text{ cm}$$

$$\therefore OD = \text{In-radius} = \frac{1}{3} \times 3\sqrt{3} = \sqrt{3} \text{ cm}$$

$$\therefore \text{Area of circle} = \pi r^2$$

$$= \pi \times \sqrt{3} \times \sqrt{3} = 3\pi \text{ cm}^2$$

55. (2) sin(n + 1)A sin(n + 2)A + cos (n + 1)A cos (n + 2)A
Here n is variable.
Put n = 0
sin A . sin2A + cos A . cos 2A
$$\Rightarrow \cos (A - 2A) = \cos (-A) = \cos A$$

56. (1) Let the number of filling pipes = x
∴ outlet pipes = (8 – x)
ATQ,

$$\frac{x}{12} - \frac{8-x}{36} = \frac{1}{3} \Rightarrow \frac{3x - 8 + x}{36} = \frac{1}{3}$$

$$\Rightarrow 4x - 8 = 12 \Rightarrow 4x = 20 \Rightarrow x = 5$$
Number of filling pipes = 5

57. (2) $\dfrac{5x}{x} - \dfrac{3}{x} + \dfrac{5y}{y} - \dfrac{3}{y} + \dfrac{5z}{z} - \dfrac{3}{z} = 0$

$$\Rightarrow 5 + 5 + 5 - 3\left(\dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{z}\right) = 0 \Rightarrow \dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{z} = \dfrac{15}{3}$$

$$\Rightarrow \left(\dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{z}\right) = 5$$

58. (3) Suppose printed price = ` 100
∴ S.P. = ` (100 − 2.5) = ` 97.5

∴ Marked price = $\dfrac{100 \times 39}{97.5}$ = ` 40

59. (3) Total amount in the bag $= \left(\dfrac{1}{4} \times 600 + \dfrac{1}{2} \times 1200\right)$

$$= (150 + 600) = ` 750$$

The amount taken out

$$= \dfrac{1}{4} \times \left(\dfrac{12}{100} \times 600\right) + \dfrac{1}{2} \times \left(\dfrac{24 \times 1200}{100}\right)$$

$$= \left(\dfrac{1}{4} \times 72 + \dfrac{1}{2} \times 288\right) = 18 + 144 = `162$$

Required percentage = $\dfrac{162}{750} \times 100 = 21.6\%$

60. (4) Let Ram's rowing rate is 'x'.
Speed of current is 'y'.

Downstream time taken = $\dfrac{12}{x + y}$

Upstream time taken = $\dfrac{12}{x - y}$

According to the question,

$$\dfrac{12}{x - y} - \dfrac{12}{x + y} = 6 \Rightarrow x^2 - y^2 = 4y \qquad ...(i)$$

Now, if speed of boat doubles = 2x
Time is 1 hr. less as compared to upstream

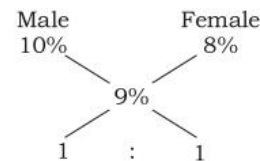$$\dfrac{12}{2x - y} - \dfrac{12}{2x + y} = 1 \Rightarrow 4x^2 - y^2 = 24y \qquad ...(ii)$$

From (i) and (ii) we get $y = \dfrac{8}{3}$ mph

61. (3) The total amount = Rs. (1000 + 140) = Rs. 1140
Let the 1st installment = Rs. x
According to question,

$$1140 = \dfrac{12}{2}[2x + (12 - 1)(-10)]$$

$$\Rightarrow 1140 = 6 \times (2x - 110)$$
$$\Rightarrow 12x = 1140 + 660$$
$$\Rightarrow 12x = 1800 \Rightarrow x = 150$$

62. (1) By Alligation method,

Ratio of male to female = 1 : 1

Number of males = $\dfrac{1}{2} \times 8000 = 4000$

63. (3) $PR = \sqrt{PM^2 + MR^2} = \sqrt{36 + 64} = 10$ cm

$PQ = \sqrt{QR^2 - PR^2} = \sqrt{(26)^2 - (10)^2} = 24$ cm

∴ ar(∆PQR) = $\dfrac{1}{2} \times PR \times PQ = \dfrac{1}{2} \times 10 \times 24 = 120$ cm²

64. (2) 20% — $\dfrac{1}{5}$, 15% — $\dfrac{3}{20}$

Before discount   After discount

5	—	4
20	—	17
100	—	68
↓×6		↓×6
₹600		₹408

65. (2)

66. (3) Volume = $\dfrac{4}{3}\pi\left[R_1^3 + R_2^3 + R_3^3\right]$

$$= \dfrac{4}{3} \times 3.14[1 + 8 + 27] = 150.72$$

25% reduced = $\dfrac{75}{100} \times 150.72 = 113.04$

According to question,

$$\left(\dfrac{4}{3}\right)\dfrac{22}{7} \times r^3 = 113.04$$

$$\Rightarrow r^3 = 27 \Rightarrow r = 3$$

67. (3) Arithmetic mean (AM) = $\dfrac{a + b}{2}$

Geometric mean (GM) = $\sqrt{ab}$
As AM > GM

$$\dfrac{a + b}{2} > \sqrt{ab}$$

68. (2)

$A \to 10 \quad\rule{2cm}{0.4pt}\quad 6$

$A \to 10 \quad\Big\rangle\; 60 \rule{1cm}{0.4pt} 5$

$A + B + C \to 30 \quad\rule{2cm}{0.4pt}\quad 2$

$\therefore$ Efficiency of tap C = $(6 + 5 - 2) = 9$ unit/hr

$\therefore$ Required time = $\dfrac{60}{9}$ hours

69. (4) Let all (175) children were to get x sweets.
According to ques., $140(x + 4) = 175x$

$\Rightarrow x = \dfrac{560}{35} = 16$

$\therefore$ Sweets to be distribution = $16 \times 175 = 2800$

70. (3)

Man	:	Day	:	Time	=	Work
117		33		8	=	$\dfrac{4}{7}$
X		13		9	=	$\dfrac{3}{7}$

$\therefore X = \dfrac{117 \times 33 \times 8 \times 3}{13 \times 9 \times 4} = \dfrac{92664}{468} = 198$

$\therefore$ Required no. = $198 - 117 = 81$

71. (2) $1.5x = 0.04y$

$\Rightarrow \dfrac{x}{y} = \dfrac{0.04}{1.5} = \dfrac{4}{150} = \dfrac{2}{75}$

$\Rightarrow \dfrac{y}{x} = \dfrac{75}{2}$

Now, $\dfrac{y^2 - x^2}{y^2 + 2xy + x^2} = \dfrac{(y - x)(y + x)}{(y + x)^2}$

$= \dfrac{y - x}{y + x} = \dfrac{\dfrac{y}{x} - 1}{\dfrac{y}{x} + 1} = \dfrac{\dfrac{75}{2} - 1}{\dfrac{75}{2} + 1} = \dfrac{73}{77}$

72. (2) $x = 6 + \dfrac{1}{x} \Rightarrow x - \dfrac{1}{x} = 6$

On squaring both sides,

$\Rightarrow x^2 + \dfrac{1}{x^2} - 2 = 36$

$\Rightarrow x^2 + \dfrac{1}{x^2} = 36 + 2 = 38$

On squaring again,

$x^4 + \dfrac{1}{x^4} + 2 = 1444$

$\Rightarrow x^4 + \dfrac{1}{x^4} = 1444 - 2 = 1442$

73. (3) Popoulation of Hindu in 2013

= 35% of 5 million = $\dfrac{35}{100} \times 5000000 = 17,50,000$

74. (2) Ratio between the Hindu and Sikh population in 2012
= 30 : 45 = 2 : 3

75. (1) Hindu population in 2012 = 30% of 5,00,000 = 1,50,000
Muslim population = 25% of 5,00,000 = 1,25,000
Total population = 1,50,000 + 1,25,000 = 2,75,000