SSC CHSL - CHT1 : 180225 GRAND TEST
HINTS AND SOLUTIONS

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

1. (1) $363 = 3 + 6 + 3 = 12 = 1 + 2 = 3$
$572 = 5 + 7 + 2 = 14 = 1 + 4 = 5$

2. (2) The first, Third, Fifth and Seventh letters are moved one step backward to obtain the corresponding letters and rest of the letters are same.

3. (2) 'Oval' is related to 'Circle' in the same way 'Rectangle' is related to Square.

4. (1) As,

A Z Y B ⟶ C X W D

Similarly,

E V U F ⟶ G T S H
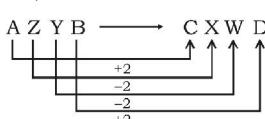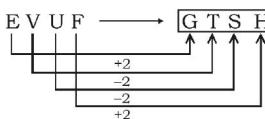
5. (3) Sum of digits in each number except (3) is 28.

6. (3) Kennel is a shelter for a pet dog, stable is a shelter for horses. Den is a living place of lion. But lock is used for safety of a door.

7. (4) 195   13 225   15 270   18 **196**   **14**

    ×15   ×15   ×15   **×14**

8. (1) All other groups of letters except option (1) have (+2) series gap in each of them.

9. (3) Letters   A L G U T
Digits   2 3 5 4 9

10. (3) From the given information, we have-
Gopal > Raman > Madan
Amar > Sripal > Gopal
Tarun > Amar > Varun
Combining all the above, we get
Tarun > Amar > Sripal > Gopal > Raman > Madan
Position of Varun will be somewhere after Amar, but it is not fixed as relation of Varun with anyone is not given. Hence, Tarun is the strongest.

11. (4) P is on the left of O i.e. P, O.
N is on the right of Q i.e. Q, N.
M is on the right of O i.e. O, M.
N is on the left of P i.e. N, P.
From the above statements, the correct order is : Q, N, P, O M.
Clearly, P is sitting in the centre.

12. (2)   1. 3   2. 5

13. (3) Whiter, Worked, Worst, Wound, Writer

14. (2) Clearly, number of boys in the row = (6 + 10 + 8) = 24

15. (2) $12 \div 2 + 9 - 4 = ?$
$6 + 9 - 4 = ?$
$15 - 4 = ?$
$\therefore ? = 11$

16. (3) $A \xrightarrow{+3} D \xrightarrow{+3} G \xrightarrow{+3} J$

$Y \xrightarrow{-3} V \xrightarrow{-3} S \xrightarrow{-3} P$

$K \xrightarrow{+3} N \xrightarrow{+3} Q \xrightarrow{+3} T$

Similarly, $O \xrightarrow{-3} L \xrightarrow{-3} I \xrightarrow{-3} F$

17. (3)

18	100	294	648	1210
↓	↓	↓	↓	↓
$3^3 - 3^2$	$5^3 - 5^2$	$7^3 - 7^2$	$9^3 - 9^2$	$11^3 - 11^2$

27	125	343	729	1331
−9	−25	−49	−81	−121
18	100	294	648	1210

18. (1) $(9 + 8) - (4 + 4) = 17 - 8 = 9$
$(11 + 5) - (3 + 3) = 16 - 6 = 10$
$(7 + 16) - (6 + 5) = 23 - 11 = 12$

19. (1) Only conclusion I follows.



I. ✔
II. ✘
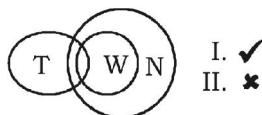
20. (4) aa/ b b/aa a/ bbb/ a aaa/ b bbb/ a
21. (3)
22. (3) 13 + 3 – 2 + 1 = 15 or 17 – 2 = 15
23. (4)
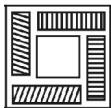
24. (2)
25. (1)
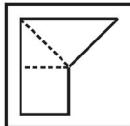
51. (3) Cost price of an article A = ` 160

Selling price of A $= 160 \times \dfrac{120}{100} = ` 192$

According to the question, Cost price of B = ` 192
Selling price of B = ` 240, Profit = 240 – 192 = ` 48

% Profit $= \dfrac{48}{192} \times 100 = 25\%$

52. (4) $\dfrac{4}{3}\pi(r_1^3 + r_2^3 + r_3^3) = \dfrac{4}{3}\pi(6)^3$

$\Rightarrow 27 + 64 + r_3^3 = 216 \Rightarrow r_3^3 = 125 \Rightarrow r_3 = 5 \text{ cm}$

53. (2) Let the height of the building x metres.
Less lengthy shadow, less in the height
(Direct proportion)
∴ 40.25 : 28.75 : : 17.5 : x
⇒ 40.25 × x = 28.75 × 17.5

$\Rightarrow x = \dfrac{28.75 \times 17.5}{40.25} = 12.5$

54. (2) C's 1 day's work

$= \dfrac{1}{3} - \left(\dfrac{1}{6} + \dfrac{1}{8}\right) = \dfrac{1}{3} - \dfrac{7}{24} = \dfrac{1}{24}$

A's wages : B's wages : C's wages

$= \dfrac{1}{6} : \dfrac{1}{8} : \dfrac{1}{24} = 4 : 3 : 1.$

∴ C's share (for 3 days) $= `\left(3 \times \dfrac{1}{24} \times 3200\right) = ` 400$

55. (1) Let the length of the side of the chess board be x cm.
Then
Area of 64 equal squares = (x – 4)²
∴ (x – 4)² = 64 × 6.25
⇒ x² – 8x + 16 = 400
⇒ x² – 8x – 384 = 0
⇒ x² – 24x + 16x – 384 = 0
⇒ (x – 24) (x + 16) = 0 ⇒ x = 24 cm
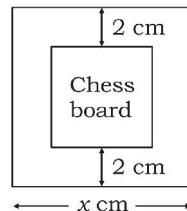
Hence option (1) is true.

56. (2) Let the highest score be x.
Then, lowest score = (x – 150)
Then, (50 × 40) – [x + (x – 150)] = 38 × 48
⇒ 2x = 2000 + 150 – 1824
⇒ 2x = 326
⇒ x = 163

57. (1) $5\tan\theta = 4 \Rightarrow \tan\theta = \dfrac{4}{5} = \dfrac{\text{Perpendicular}}{\text{Base}}$

Now, $\dfrac{5\sin\theta - 3\cos\theta}{5\sin\theta + 3\cos\theta} = \dfrac{5\tan\theta - 3}{5\tan\theta + 3}$

$= \dfrac{5 \times \dfrac{4}{5} - 3}{5 \times \dfrac{4}{5} + 3} = \dfrac{1}{7}.$

58. (3) Neha → 20 ——— 5
Vertika → 25 ——— 100 — 4
Neha+Vertika+ Monika → 10 ——— 10
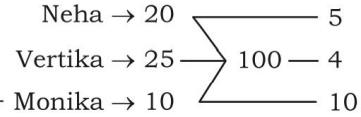
Hence share of monika $= \dfrac{1}{10} \times 700 = ` 70$

59. (3) L.C.M. of 21, 24, 28 = 168
∴ Required numbers = 168 × 15 = 2520
168 × 16 = 2688, 168 × 17 = 2856

60. (4) $3 + \dfrac{1}{\sqrt{3}} + \dfrac{1}{(3+\sqrt{3})} \times \dfrac{(3-\sqrt{3})}{(3-\sqrt{3})} - \dfrac{1}{3-\sqrt{3}} \times \dfrac{(3+\sqrt{3})}{(3+\sqrt{3})}$

$= 3 + \dfrac{1}{\sqrt{3}} + \dfrac{1}{6}(3-\sqrt{3}) - \dfrac{1}{6}(3+\sqrt{3})$

$= 3 + \dfrac{1}{\sqrt{3}} + \dfrac{1}{2} - \dfrac{\sqrt{3}}{6} - \dfrac{1}{2} - \dfrac{\sqrt{3}}{6}$

$= 3 + \dfrac{1}{\sqrt{3}} - \dfrac{2\sqrt{3}}{6} = 3 + \dfrac{1}{\sqrt{3}} - \dfrac{\sqrt{3}}{3} = 3 + \dfrac{1}{\sqrt{3}} - \dfrac{1}{\sqrt{3}} = 3$

61. (3) $\dfrac{4x-3}{x} + \dfrac{4y-3}{y} + \dfrac{4z-3}{z} = 0$

$\Rightarrow \dfrac{4x}{x} - \dfrac{3}{x} + \dfrac{4y}{y} - \dfrac{3}{y} + \dfrac{4z}{z} - \dfrac{3}{z} = 0$

$\Rightarrow \dfrac{3}{x} + \dfrac{3}{y} + \dfrac{3}{z} = 4 + 4 + 4 = 12 \Rightarrow \dfrac{1}{x} + \dfrac{1}{y} + \dfrac{1}{z} = \dfrac{12}{3} = 4.$

62. (2) Let C.P. = ` 100,
Then, Profit = ` 320, S.P. = ` 420
New C.P. = 125% of ` 100 = ` 125
New S.P. = ` 420
Profit = ` (420 – 125) = ` 295

∴ Required percentage

$$=\left(\frac{295}{420}\times100\right)\%=\frac{1475}{21}\%=70\%\ \text{(approx.)}$$

63. (1) Let the third proportional to $(x^2 - y^2)$ and $(x - y)$ be z.

Then $(x^2 - y^2) : (x - y) :: (x - y) : z$

$\Rightarrow (x^2 - y^2) \times z = (x - y)^2$

$$\Rightarrow z = \frac{(x-y)^2}{(x^2-y^2)}=\frac{(x-y)}{(x+y)}.$$

64. (2) Total profit required $= ` (42 \times 18) = ` 756$

Profit on 22 sarees $= ` (460 + 144) = ` 604$

Profit on 20 sarees $= ` (756 - 604) = ` 152$

Average profit on these sarees

$$= ` \left(\frac{152}{20}\right)= ` 7.60$$

65. (2) $\angle AOC = \angle BOD = 31°$ (vertically opposite)

∴ $\angle BOC = 180° - \angle AOC = 149°$

66. (1) Let the sum invested in Scheme A be ` x and that in Scheme B be ` (13900 − x).

Then, $\left(\frac{x\times14\times2}{100}\right)+\left(\frac{(13900-x)\times11\times2}{100}\right)=3508$

$\Rightarrow 28x - 22x = 350800 - (13900 \times 22)$

$\Rightarrow 6x = 45000$

$\Rightarrow x = 7500$

So, sum invested in Scheme B

$= ` (13900 - 7500) = ` 6400$

67. (2) Since $1 < x < 2$, we have $x - 1 > 0$ and $x - 3 < 0$ or $3 - x > 0$

$\therefore \sqrt{(x-1)^2}+\sqrt{(x-3)^2} \qquad =\sqrt{(x-1)^2}+\sqrt{(3-x)^2}$
$$= x - 1 + 3 - x = 2$$

68. (2) AB ‖ EF ‖ CD. So ABEF is a rectangle
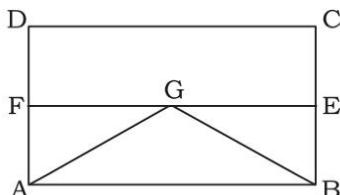
∴ $\Delta AGB = \dfrac{1}{2}$ (area of rectangle ABEF)

$$=\frac{1}{2}\times\left(\frac{1}{2}\ \text{area of rectangle ABCD}\right)$$

$$=\frac{1}{4}\ \text{(area of rectangle ABCD)}$$

or, If a triangle and a parallelogram are on the same base and between the same parallels then the area of the triangle is equal to half the area of the parallelogram.

69. (2) Radius of circular wire $=\dfrac{42}{2}=21\ cm$

Circumference of wire $= 2\pi r = 2 \times \dfrac{22}{7} \times 21 = 132\ cm$

Let the length and breadth of rectangle be 6x and 5x respectively.

∴ Perimeter of rectangle $= 2(6x + 5x) = 22x$

According to the question,

$$22x = 132 \Rightarrow x = \frac{132}{22} = 6$$

∴ Length of rectangle $= 6x = 6 \times 6 = 36\ cm$

Breadth of rectangle $= 5x = 5 \times 6 = 30\ cm$

∴ Area $= 36 \times 30 = 1080\ cm^2$

70. (3) $x + y + z = 13$

$x^2 + y^2 + z^2 = 69$

$(x + y + z)^2 = x^2 + y^2 + z^2 + 2(xy + yz + zx)$

$\Rightarrow (13)^2 = 69 + 2(xy + yz + zx)$

$\Rightarrow 2(xy + yz + zx) = 169 - 69 = 100$

$$\Rightarrow xy + yz + zx = \frac{100}{2} = 50.$$

71. (3) Remaining distance $= 3\ km$

and Remaining time $=\left(\dfrac{1}{3}\times45\right)\ min$

$=15\ min = \dfrac{1}{4}\ hr.$

∴ Required speed $= (3 \times 4)\ km/hr = 12\ km/hr$

72. (2) $\sin\theta$ and $\cos\theta$ are the roots of $ax^2 - bx + c = 0$

$\therefore \sin\theta + \cos\theta = +\dfrac{b}{a}$ ...(1)

and $\sin\theta \cdot \cos\theta = +\dfrac{c}{a}$

Squaring the equation (1)

We get $(\sin\theta + \cos\theta)^2 = \left(\dfrac{b}{a}\right)^2$

$\therefore \sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta = \dfrac{b^2}{a^2}$

$\therefore 1 + 2 \times \left(\dfrac{c}{a}\right) = \dfrac{b^2}{a^2} \Rightarrow \dfrac{b^2}{a^2} - \dfrac{2c}{a} = 1$

$\therefore \dfrac{b^2 - 2ac}{a^2} = 1 \Rightarrow b^2 - 2ac = a^2$

$\Rightarrow a^2 - b^2 + 2ac = 0$

73. (2) In 2013 collaboration with U.S.A $=\dfrac{64.8}{360}\times1200=216$

In 2014 collaboration with U.S.A $=\dfrac{75.6}{360}\times1500=315$

∴ Required difference $= 315 - 216 = 99$

74. (3) In 2013 $=\dfrac{50.4}{3600}\times1200=168$; In 2014 $=\dfrac{43.2}{3600}\times1500=180$

∴ Required Ratio $= 168 : 180 = 14 : 15$

75. (2) In 2013 $=\dfrac{54}{360}\times1200=180$; In 2014 $=\dfrac{46.8}{360}\times1500=195$

∴ Required change $=\dfrac{15}{180}\times100=8\dfrac{1}{3}\%$ increase