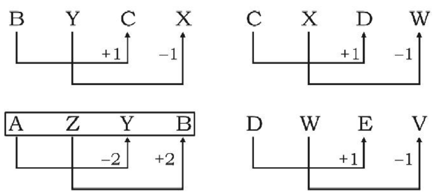
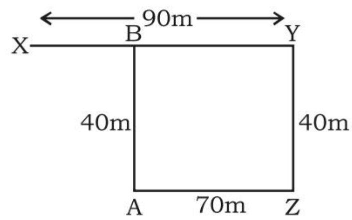
SSC CHSL - CHT1 : 180228 GRAND TEST
HINTS AND SOLUTIONS

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

1. (3) Stethoscope is an instrument used by doctor, Similarly, chisel is used by sculptor.
2. (3) $7 \times 19 = 133$
Similarly, $9 \times 19 = 171$.
3. (3) A cub is a young bear, and a joey is a young kangaroo.
4. (1) $9536 - 6203 = 3333$,
Similarly,
$? = 5873 - 3333 = 2540$
5. (1) Except 379, the sum of the digits in rest of the options is 13.
6. (3)



7. (2) Read 'Stream' as 'Stem'.
Except (B), In others second is a part of first whereas chair and sofa are different types.
8. (3) In the word MEET, the second and the third letters are the same.
9. (2)
10. (3) $A = 1 \Rightarrow 1^3 + 1^2 + 1 = 3$
$B = 2 \Rightarrow 2^3 + 2^2 + 2 = 14$
$C = 3 \Rightarrow 3^3 + 3^2 + 3 = 39$
$D = 4 \Rightarrow 4^3 + 4^2 + 4 = 84$
$\therefore$ $G = 7 \Rightarrow 7^3 + 7^2 + 7 = 399$
11. (3) Grandson of Arun's mother means either son or nephew of Arun. Therefore, Arun is the father-in-law of that girl.
12. (2) $W \xrightarrow{+5} B \xrightarrow{+9} K \xrightarrow{+6} Q \xrightarrow{+7} X \xrightarrow{+1} Y \xrightarrow{+7} F$
$\mathbf{W} \xrightarrow{+2} \mathbf{Y} \xrightarrow{+3} \mathbf{B} \xrightarrow{+4} \mathbf{F} \xrightarrow{+5} \mathbf{K} \xrightarrow{+6} \mathbf{Q} \xrightarrow{+7} \mathbf{X}$
$Y \xrightarrow{+3} B \xrightarrow{+15} Q \xrightarrow{+0} Q \xrightarrow{-11} F \xrightarrow{+2} H \xrightarrow{+6} N$
$W \xrightarrow{+3} Z \xrightarrow{+3} C \xrightarrow{+5} H \xrightarrow{+2} J \xrightarrow{+3} M \xrightarrow{+4} Q$
13. (3) $5 \times 2 + 1 = 11$
$11 \times 2 - 1 = 21$
$21 \times 2 + 1 = 43$
$43 \times 2 - 1 = 85$
$85 \times 2 + 1 = 171$
14. (2) $A \xrightarrow{+1} B \xrightarrow{+1} C \xrightarrow{+1} D \xrightarrow{+1} \boxed{E}$
$N \xrightarrow{+1} O \xrightarrow{+1} P \xrightarrow{+1} Q \xrightarrow{+1} \boxed{R}$
15. (3) $7 \times 6 + 6 \times 4 + 4 \times 7 = 42 + 24 + 28 = 94$
$5 \times 3 + 3 \times 2 + 5 \times 2 = 15 + 6 + 10 = 31$
$8 \times 5 + 5 \times 3 + 3 \times 8 = 40 + 15 + 24 = 79$
16. (3) $4 \times 8 + 3 = 32 + 3 = 35$
$7 \times 6 + 7 = 42 \Rightarrow 42 + 7 = 49$
$9 \times 8 + 9 = 72 + 9 = 81$
17. (3)



Required distance = XB = 90 – 70 = 20 metre
18. (2) Number of days from March 6, 1993 to August 15, 1993.
March — April — May — June — July —August
= 25 + 30 + 31 + 30 + 31 + 15
= 162 days = 23 weeks + 1 day
Clearly, the day on March 6, will be the same as on August 14 i.e., Thursday.

19. (1) First Premise is Particular Affirmative (I-type).
Second Premise is Universal Negative (E-type).

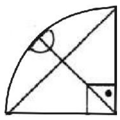
Some cats are dogs.

No dog is a toy.

I + E $\Rightarrow$ O – type of Conclusion.
"Some cats are not toys."
This is Conclusion III.
Conclusion I is Converse of the first Premise.

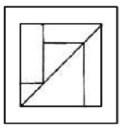
20. (2) L.C.M. of 6, 5, 7, 10 and 12 is 420.
So, the bells will ring together after every 420 seconds i.e. 7 minutes.
Now, 7 × 8 = 56 and 7 × 9 = 63.
Thus, in 1 hour (or 60 minutes), the bells will toll together 8 times, excluding the one at the start.

21. (2)



22 (3)
23 (2)
24 (3)

25. (4)



51 (1)

52. (2) Let speed of boat = x, speed of current = y
Downstream speed = (x + y),
upstream speed = (x – y)
Condition (i):

$$\frac{21}{x+y}+\frac{21}{x-y}=10 \qquad ...(1)$$

Condition (ii):

$$\frac{7}{x+y}=\frac{3}{x-y} \Rightarrow \frac{x+y}{x-y}=\frac{7}{3},\ \text{assume } x + y = 7k,$$

(x – y) = 3k, put values in equ. (1)
then, k = 1, x + y = 7, x – y = 3

speed of boat $=\frac{7+3}{2}=5\ \text{km/h}$

speed of current $=\frac{7-3}{2}=2\ \text{km/h}$

53. (1) $$4\operatorname{cosec}^2\theta+9\sin^2\theta=\frac{4}{\sin^2\theta}+9\sin^2\theta$$

$$=\left(\frac{2}{\sin\theta}\right)^2+(3\sin\theta)^2 \qquad \because a^2+b^2=(a-b)^2+2ab$$

$$=\left(\frac{2}{\sin\theta}-3\sin\theta\right)^2+2\cdot\frac{2}{\sin\theta}\cdot 3\sin\theta$$

$$=\left(\frac{2-3\sin^2\theta}{\sin\theta}\right)+12$$

For the least value $\left(\frac{2-3\sin^2\theta}{\sin\theta}\right)$ would be 0 (zero).

$\therefore$ The least value = 12

54 (3)
55 (4)
56 (3)

57. (3) We may consider that ` (1800 – 1650) gives interest of ` 30 at 4% per annum.

$$\therefore \text{Time } =\frac{30\times 100}{150\times 4}=5 \text{ years}$$

58. (4) x = y

$$\Rightarrow 2t=\frac{2t-1}{3}\Rightarrow 6t=2t-1\Rightarrow 4t=-1$$

$$\Rightarrow t=-\frac{1}{4}$$

59 (1)

60. (2) Given $x=\frac{\sqrt{3}}{2}$

$$\frac{\sqrt{1+x}}{1+\sqrt{1+x}}\times\frac{1-\sqrt{1+x}}{1-\sqrt{1+x}}+\frac{\sqrt{1-x}}{1-\sqrt{1-x}}\times\frac{1+\sqrt{1-x}}{1+\sqrt{1-x}}$$

$$=\frac{\sqrt{1+x}-1-x}{1-1-x}+\frac{\sqrt{1-x}+1-x}{1-1+x}$$

$$=\frac{\sqrt{1-x}+1-x}{x}-\frac{\sqrt{1+x}-1-x}{x}$$

$$=\frac{\sqrt{1-x}+1-x-\sqrt{1+x}+1+x}{x}$$

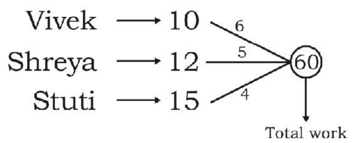
$$=\frac{2+\sqrt{1-x}-\sqrt{1+x}}{x}=\frac{2+\sqrt{1-\frac{\sqrt{3}}{2}}-\sqrt{1+\frac{\sqrt{3}}{2}}}{\frac{\sqrt{3}}{2}}$$

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

$$=\frac{4+\sqrt{3}-1-\sqrt{3}-1}{\sqrt{3}}=\frac{2}{\sqrt{3}}.$$

61. (2) Let x is the no. of individuals who were covered. Then, Percentage of uncertain individuals
$= [100 - (20 + 60)]\% = 20\%$
$\therefore$ 60% of x – 20% of x = 720
$\Rightarrow$ 40% of x = 720
$\Rightarrow \frac{40}{100}x = 720 \Rightarrow x = \left(\frac{720 \times 100}{40}\right) = 1800.$

62. (1) Runs in the first match = 150
Runs in the second match $= \frac{150}{5} \times 6 = 180$
Runs in the third match $= \frac{180}{4} \times 3 = 135$
Required average $= \frac{150 + 180 + 135}{3} = 155$

63. (3)


Vivek leaves after 2 days so remaining work
= 60 – 12 = 48
and last three days stuti work alone
$\therefore$ Remaining work ? 60 – 12 + 15 = 63
$\therefore$ Required time $= \frac{63}{9} = 7$ days
Total days $\rightarrow$ 4 + 3 = 7

64 (2)

65. (3) Side of the first square
$= \sqrt{\text{Area}} = \sqrt{200} = 10\sqrt{2}$ metre
Its diagonal $= \sqrt{2} \times \text{side} = 10\sqrt{2} \times \sqrt{2} = 20$ metre
$\therefore$ Diagonal of new square
$= \sqrt{2} \times 20 = 20\sqrt{2}$ metre
$\therefore$ Its area $= \frac{1}{2} \times (\text{diagonal})^2$
$= \frac{1}{2} \times 20\sqrt{2} \times 20\sqrt{2}$ m = 400 sq. metre

66. (4) Area of the base $= \frac{\sqrt{3}}{4} \times (\text{side})^2$
$= \frac{\sqrt{3}}{4} \times 6 \times 6 = 9\sqrt{3}$ sq. cm.
$\therefore$ volume of the prism = Area of the base × height
$\Rightarrow 108\sqrt{3} = 9\sqrt{3} \times h$
$\Rightarrow h = \frac{108\sqrt{3}}{9\sqrt{3}} = 12$ cm

67 (3)

68. (1) Let the amount (sum) deposited for the two sons are A and B respectively.
ATQ,
$$A\left(1 + \frac{4}{100}\right)^5 = B\left(1 + \frac{4}{100}\right)^7$$
$$\Rightarrow \frac{A}{B} = \left(1 + \frac{4}{100}\right)^2 = \left(\frac{26}{25}\right)^2 = \frac{676}{625}$$
$\therefore$ (676 + 625) units = 2602
1301 units = 2602
1 unit = 2
Amount deposited into the account of 1st son
= 676 × 2 = ` 1352

69. (3) $ax^2 + bx + c = a(x - p)^2$
$ax^2 + bx + c = a(x^2 - 2px + p^2)$
$ax^2 + bx + c = ax^2 - 2apx + ap^2$
On comparison, we get
$b^2 = 4a^2 p^2$ and $p^2 = \frac{c}{a}$
$\Rightarrow p^2 = \frac{b^2}{4a^2} \Rightarrow \frac{b^2}{4a^2} = \frac{c}{a}$
$\Rightarrow \boxed{b^2 = 4ac}$

70 (3)

71. (3) Required number of students passed in third division = 70

72. (3) Percentage of students failed in 1984
$= \frac{35}{200} \times 100 = 17\frac{1}{2}\%$

73. (3) Total passed students = 140 + 150 + 165 = 455
Total students = 170 + 195 + 200 = 565
$\therefore$ Required percentage
$= \frac{455}{565} \times 100 = \frac{9100}{113} = 80\frac{60}{113}\%$

74. (4) Required percentage $= \frac{20}{170} \times 100 = \frac{200}{17} = 11\frac{13}{17}\%$

75. (4) Required percentage $= \frac{140}{170} \times 100 = \frac{1400}{17} = 82\frac{6}{17}\%$