SSC CHSL - CHT1 : 180346 GRAND TEST
HINTS AND SOLUTIONS
ANSWER KEY

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

1. (1) $22 : 22^2 + 22 :: 27 : 27^2 + 27$
    $$\downarrow\downarrow$$
    506   756

2. (3) Stethoscope is an instrument used by doctor, Similarly, chisel is used by sculptor.

3. (3) As, M U M B A I $\longrightarrow$ L T L A Z H

    Similarly, D E L H I $\longrightarrow$ C D K G H

4. (4) River contains flowing water. Similarly, pool contains stagnant water.

5. (4) 195   13 225   15 270   18 **196**   **14**

    ×15   ×15   ×15   **×14**

6. (2) All except Argentina are continents, while Argentina is a country.

7. (2)

8. (1) Each of the numbers except 48, is one more than the square of a certain number.

9. (3)

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

    $$\begin{array}{ccccc} 27 & 125 & 343 & 729 & 1331 \\ -9 & -25 & -49 & -81 & -121 \\ \hline 18 & 100 & 294 & 648 & 1210 \end{array}$$

10. (2) $2187 \times \dfrac{1}{3} = 729; \ 729 \times \dfrac{1}{3} = 243;$

    $243 \times \dfrac{1}{3} = 81; \ 81 \times \dfrac{1}{3} = 27$

    $27 \times \dfrac{1}{3} = 9; \ 9 \times \dfrac{1}{3} = 3$

11. (3) The sequence in first column is multiplied by 5.
    Thus, $1 \times 5 = 5, 5 \times 5 = 25, 25 \times 5 = 125$
    The sequence in third column is multiplied by 2.
    Thus, $7 \times 2 = 14, 14 \times 2 = 28, 28 \times 2 = 56$
    The sequence in second column is multiplied by 4.
    $\therefore$ Missing number $= 12 \times 4 = 48$

12. (2) $6 + (2)^2 = 10$
    $10 + (3)^2 = 19$
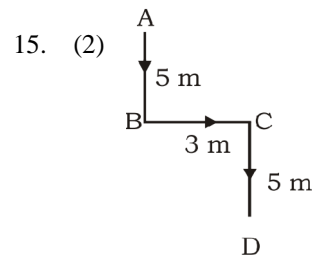 $19 + (4)^2 = 35.$

13. (1) The correct sequence is $5^2, 7^2, 9^2, 11^2, 13^2$ and 15^2.
    So, 36 is wrong.

14. (2) $12 \div 2 + 9 - 4 = ?$
    $6 + 9 - 4 = ?$
    $15 - 4 = ?$
    $\therefore \ ? = 11$

15. (2)

    A
    $\downarrow$ 5 m
    B → C
    3 m
    $\downarrow$ 5 m
    D

    Hence X will face in the end towards South.

16. (3) The correct order is :

Arrival	Introduction	Presentation
(3)	(5)	(1)

Discussion	Recommendation
(4)	(2)

17. (2) When Rahul was born, his brother's age = 6 years
His father's age = (6 + 32) years = 38 years
His mother's age = (38 – 3) years = 35 years
His sister's age = (35 – 25) years = 10 years.

18. (1) All the number in the given set are prime numbers. Here, 5 is also a prime number and it belongs to the same group.

19. (2) $B > A > E$, $C > B$, $B > D > A$, $C > B > D > A > E$

20. (2) If 26th August in a year is Thursday. Hence, next Sunday is on 29th August. Hence total number of Sunday is 29, 22, 15, 8, 1.

21. (3) Using the correct symbols, we have :
Given expression
$$= 26 \times 74 \div 5 + 2 = 26 \times \frac{37}{2} - 5 + 2$$
$$= 13 \times 37 - 5 + 2 = 481 - 5 + 2 = 478$$

22. (2)

23. (2)

24. (4)

25. (3)

51. (3) $$\sqrt{\frac{\sqrt{36} - \sqrt{24} + \sqrt{24} - \sqrt{16}}{5 + \sqrt{24}}}$$

$$= \sqrt{\frac{6-4}{5+\sqrt{24}}} = \sqrt{\frac{2}{5+\sqrt{24}}} = \sqrt{\frac{2}{5+\sqrt{6\times4}}}$$

$$= \sqrt{\frac{2}{5+2\sqrt{6}}} = \sqrt{\frac{2}{5+2\sqrt{6}} \times \frac{5-2\sqrt{6}}{5-2\sqrt{6}}}$$

$$= \sqrt{\frac{2(5-2\sqrt{6})}{25-24}} = \sqrt{2(5-2\sqrt{6})}$$

$$= \sqrt{2[(\sqrt{3})^2 + (\sqrt{2})^2 - 2\sqrt{3}\sqrt{2}]}$$

$$= \sqrt{2(\sqrt{3}-\sqrt{2})^2} = \sqrt{2}(\sqrt{3}-\sqrt{2}) = \sqrt{6} - 2$$

52. (2) Men to be arranged = (6000 – 71) = 5929
Number of men arranged in each row
$$= \sqrt[2]{5929} = 77$$

53. (3) Minimum pass marks = 50%
50% → = 163 + 37
         = 200
Maximum marks in exam.
100 → 400

54. (1) L.C.M. of 18, 36, 45 and 60 = 180

Now, $\dfrac{17}{18} = \dfrac{17 \times 10}{18 \times 10} = \dfrac{170}{180}$

$\dfrac{31}{36} = \dfrac{31 \times 5}{36 \times 5} = \dfrac{155}{180}$

$\dfrac{43}{45} = \dfrac{43 \times 4}{45 \times 4} = \dfrac{172}{180}$

$\dfrac{59}{60} = \dfrac{59 \times 3}{60 \times 3} = \dfrac{177}{180}$

Since, $155 < 170 < 172 < 177$,

So, $\dfrac{155}{180} < \dfrac{170}{180} < \dfrac{172}{180} < \dfrac{177}{180}$
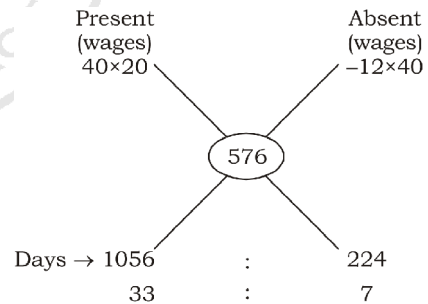
Hence, $\dfrac{31}{36} < \dfrac{17}{18} < \dfrac{43}{45} < \dfrac{59}{60}$

55. (1) Let the SP of 10 article
= ` 1 = CP of 11 article
$$\text{Gain} = \frac{1}{10} - \frac{1}{11} = \frac{11-10}{110} = \frac{1}{110}$$

$$\text{Gain \%} = \frac{1}{110} \times \frac{100}{\frac{1}{11}} = 10\%$$

56. (1)

Present (wages) 40×20   Absent (wages) –12×40

576

Days → 1056   :   224
     33   :   7

Number of days in which he was absent
$$= \frac{40}{(33+7)} \times 7 = 7 \text{ days}$$

57. (2) $\sqrt{7} - \sqrt{5}, \sqrt{5} - \sqrt{3}, \sqrt{9} - \sqrt{7}, \sqrt{11} - \sqrt{9}$

On rationalizing each term

$$= \frac{2}{\sqrt{7}-\sqrt{5}}, \frac{2}{\sqrt{5}-\sqrt{3}}, \frac{2}{\sqrt{9}-\sqrt{7}}, \frac{2}{\sqrt{11}-\sqrt{9}}$$

Smallest denominator = $\sqrt{5} + \sqrt{3}$

So largest value = $\sqrt{5} - \sqrt{3}$

58. (3) $2\dfrac{1}{2}\% = \dfrac{1}{40}$

Initial value	New value
40	41
40	41
40	41
64000 :	68921

Hence the population of the town after 3 years = 68,921

59. (3) Since the sum of any two sides of a triangle is greater than the 3rd side.
2 + 3 > 5, which is wrong.
2 + 3 > 6, which is wrong.
∴ (2, 3, 5) or (2, 3, 6) will not form a triangle.
Triplets (3, 5, 6) and (2, 5, 6) are true for the sides of a triangle = 2 triangles.

60. (4) Let the total number of voters be x.

Number of votes cast in the election $= \dfrac{92}{100}x$

Number of votes obtained by winner $= \dfrac{48}{100}x$

Number of votes obtained by the defeated candidate

$= \dfrac{(92-48)}{100}x = \dfrac{44}{100}x$

From question, $\dfrac{48x}{100} - \dfrac{44x}{100} = 1100$

$\Rightarrow 4x = 110000 \Rightarrow x = 27500$
Total number of voters = 27,500.

61. (1) Old Ratio $= \dfrac{1}{4} : \dfrac{1}{5} : \dfrac{1}{6}$

$= \dfrac{1}{4}\times 60 : \dfrac{1}{5}\times 60 : \dfrac{1}{6}\times 60 = 15 : 12 : 10$

Amount of C $= \dfrac{10}{15+12+10}\times 555$

$= \dfrac{10}{37}\times 555 = `150$

New ratio = 4 : 5 : 6

New Amount of C $= \dfrac{6}{15}\times 555 = 6\times 37 = `222$

Required Excess Amount = ` (222-150) = ` 72

62. (3) LCM of 9, 10 and 15 = 90
⇒ The multiple of 90 are also divisible by 9, 10 or 15.
∴ 21 × 90 = 1890 will be divisible by them.
∴ Now, 1897 will be the number that will give remainder 7.
1936 – 1897
Required number = 1936 – 1897 = 39

63. (1) I no. × II no. = L.C.M. × H.C.F.

$(x^2 + 2x - 3)\times P = (x^3 + 7x + 6)\times(x+3)$

$\Rightarrow P = \dfrac{(x^2 + 7x + 6)(x+3)}{x^2 + 2x - 3}$

$\Rightarrow P = (x+3)(x-2) = x^2 + x - 6$

64. (3) Sum of 8 numbers = 20 × 8 = 160

$\left(15\dfrac{1}{2}\right)\times 2 + \left(21\dfrac{1}{3}\right)\times 3 + x + x + 4 + x + 7 = 160$

$\Rightarrow 31 + 64 + 3x + 11 = 160 \Rightarrow 3x = 160 - 106$

$\Rightarrow x = \dfrac{54}{3} \Rightarrow x = 18$
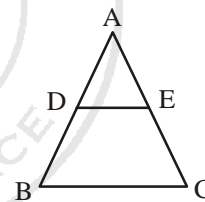
8th number = x + 7 = 18 + 7 = 25

65. (4) Let the third proportional to $(x^2 - y^2)$ and $(x - y)$ be z. Then
$(x^2 - y^2) : (x - y) :: (x - y) : z$
$\Rightarrow (x^2 - y^2) \times z = (x - y)^2$

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

66. (4) DE ∥ BC (given)

Since ΔADE and ΔABC are similar

$\dfrac{ar(ADE)}{ar(ABC)} = \left|\dfrac{AD}{AB}\right| \Rightarrow \sqrt{\dfrac{1}{2}} = \dfrac{AD}{AB}$

$\Rightarrow \dfrac{AD}{AB} = \sqrt{\dfrac{1}{2}} \Rightarrow \dfrac{AD}{BD} = \dfrac{1}{\sqrt{2}-1}$

67. (4) We know that the centroid of a triangle divides each median in the ratio of 2 : 1
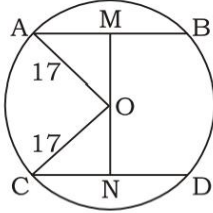∴ BG : BE = 2 : 3

$\Rightarrow BE = \dfrac{3}{2}BG = \dfrac{3}{2}\times 6 = 9$ cm
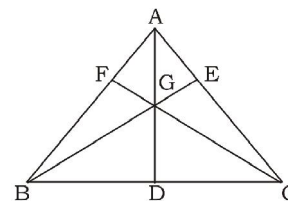
68. (4) MN = 23 cm

AM = MB = $\dfrac{16}{2}$ = 8 cm

∴ In ΔAMO,

$(OM)^2 = (17)^2 - (8)^2$

∴ OM = 15 cm

∴ ON = 23 - 15 = 8 cm

In ΔONC,

$(CN)^2 = (17)^2 - (8)^2 \Rightarrow CN = 15$ cm

∴ CD = 2CN = 30 cm

69. (3) According to the question, let the number are a and b.

$(a - b) : (a + b) : ab = 1 : 7 : 24$

Numbers are a = 8, b = 6

So product = 8 × 6 = 48

70. (4) Given,

Total earning of A + B + C = 760000   ...(1)

Percentage of their saving are 30%, 25% and 20% respectively.

Let, savings of A, B and C be 4x, 5x and 6x respectively.

Now, 30% of A = 4x

or, $30 \times \dfrac{A}{100} = 4x \Rightarrow A = \dfrac{40}{3}x$ ...(2)

Also, 25% of B = 5x

Or, $25 \times \dfrac{B}{100} = 5x \Rightarrow B = 20x$ ...(3)

Also, 20% of C = 6x

Or, $20 \times \dfrac{C}{100} = 6x \Rightarrow C = 30x$ ...(4)

On using (2), (3) and (4) in (1), we get

$\dfrac{40x}{3} + 20x + 30x = 76000 \Rightarrow x = 1200$

$\therefore A = \dfrac{40x}{3} = \dfrac{40}{3} \times 1200 = 16000$

B = 20x = 20 × 1200 = 24000

C = 30x = 30 × 1200 = 36000

∴ (A + B) − C = (16000 + 24000) − 36000 = Rs.4000.

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

72. (3) Percentage of students failed in 1984

$= \dfrac{35}{200} \times 100 = 17\dfrac{1}{2}\%$

73. (3) Total passed students = 140 + 150 + 165 = 455

Total students = 170 + 195 + 200 = 565

∴ Required percentage

$= \dfrac{465}{565} \times 100 = \dfrac{9100}{113} = 80\dfrac{60}{113}\%$

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

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