SSC CHSL - CHT1 : 180341 GRAND TEST
HINTS AND SOLUTIONS
ANSWER KEY

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

1. (3)
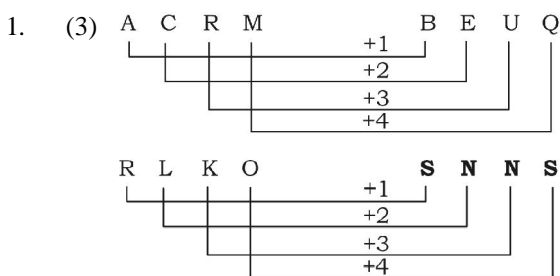
2. (2) $10 - 1 = 9$ and $9 \times 11 = 99$
$9 - 1 = 8$ and $8 \times 11 = 88$

3. (3) $Q \xrightarrow{+3} T \xrightarrow{+1} U$
$I \xrightarrow{+3} L \xrightarrow{+1} M$
$B \xrightarrow{+3} E \xrightarrow{+1} F$

Similarly,
$W \xrightarrow{+3} Z \xrightarrow{+1} A$

4. (2) $3*3-1 = 9 - 1 = 8$
$3*3*3+1 = 27+1 = 28$
$4*4-1 = 16-1 = 15$
$4*4*4+1 = 64+1 = 65$

5. (2) All except Gazelle are animals found in the mountains.

6. (1) Except (41-72) The difference between rest of the intervals is a multiple of 9.

7. (1) Except mare, all the others are different types of deer.

8 (2) In all other pairs, the product of the two numbers is 126.

9. (3)

So, missing term = $5^3 - 5 = 120$

10. (2) Series is; 1^2, $(2^2 + 1)$, 3^2, $(4^2 + 1)$, 5^2, $(6^2 + 1)$, 7^2
So wrong term is 15

11. (3) $\dfrac{20+9+14+7}{2} = 30$

and $\dfrac{11+16+10+13}{2} = 25$

Therefore, $\dfrac{18+?+12+20}{2} = 32$

$\Rightarrow ? = 64 - 50 = 14$

12. (2) $(7 \times 3) = 21$ and $(9 \times 3) = 27$
and $(4 \times 9) = 36$ and $(2 \times 9) = 18$
Therefore, $(9 \times 6) = 54$ and $(4 \times 6) = 24$.

13. (4) Originally, let number of women = X.
Then, number of men = 2X.
So, in city Y, we have :
$(2X – 10) = (X + 5)$ or X = 15.
Therefore, total number of passengers in the beginning
$= (X + 2X) = 3X = 45$.

14. (1)   No. of letters
I like You   8 $\times 2 = 16$
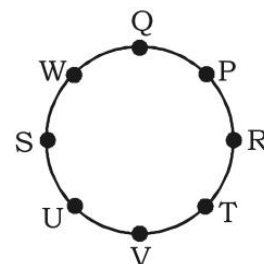I hate u   6 $\times 2 = 12$

15. (2) The arrangement is as follows:
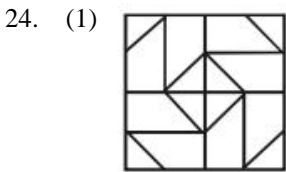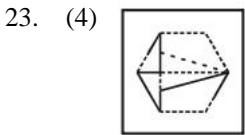T   Q   P   R   S
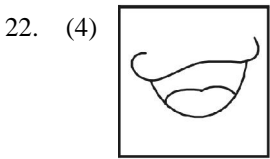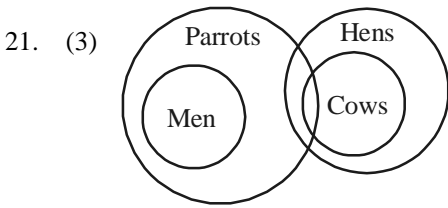Therefore, P is sitting between Q and R.

16. (4) | a **b** | a b **c** | a b c d | **a** b c d e | **a** b

17. (4) The girl is the wife of the grandson of Amit's mother i.e. the girl is the wife of son of Amit. Hence, Amit is father-in-law of that girl.

18. (3)

19. (2)

20. (3) Let Varun's age today = x years. Then, Vaurn's age after 1 year = (x + 1) years.
x + 1 = 2 (x – 12) $\Rightarrow$ x + 1 = 2x – 24$\Rightarrow$ x = 25.

21. (3)

22. (4)

23. (4)

24. (1)

25. (3)

51. (1)

Chemistry : Mathematics	Mathematics : Physics
3 : 5	3 : 5

After combining the ratio,
Chemistry : Mathematics : Physics
  9x : 15x : 25x
According to the question,
9x + 15x + 25x = 147
$\Rightarrow$ 49x = 147
$\Rightarrow$ x = 3
Marks in chemistry = 9 × 3 = 27

52. (2) Square root of

$$\frac{(0.75)^3}{(1-0.75)} + (0.75 + (0.75)^2 + 1)$$

$$= \frac{(0.75)^3 + 1^3 - (0.75)^3}{(1-0.75)} = \frac{1}{0.25} = 4$$

Square root of 4 is 2

53. (3) Area of the base

$$= \frac{1}{2} \text{ (sum of parallel sides)} \times \text{perpendicular distance}$$

$$= \frac{1}{2}(14+8) \times 8 = 88 \text{ sq. cm.}$$

$\therefore$ Volume = Area of the base × height

$$\Rightarrow 1056 = 88 \times h \Rightarrow h = \frac{1056}{88} = 12 \text{ cm}$$

54. (1) Total age of the 4 members of the family, 10 yrs. ago = 24 × 4 = 96 yrs.
Present age of 4 members = 96 + 40 = 136 yrs.
Total age of the 7 members presently = 22 × 7 = 154 yrs.
Age of [twins + youngest child] = 154 – 136 = 18 yrs.
Let the age of the one of the twins = x yrs.
$\therefore$ age of the youngest = (x – 3) yrs.
Then, 2x + (x – 3) = 18 or, 3x = 21
$\therefore$ Age of children = 7, 7, 4 yrs.

55. (1) Difference in time after accident
= (4 + 1 – 3.5)hr = 1.5 km
Distance = 150 km

$$\text{Speed} = \frac{150}{1.5} = 100 \text{ km/h}$$

Speed after accident 75% = $\frac{3}{4}$

ATQ,

Required distance = 12 × 100 = 1200 km

56. (3) $p \times q = p + q + \frac{p}{q}$

$$\therefore 8 \times 2 = 8 + 2 + \frac{8}{2} = 10 + 4 = 14$$

57. (2) Area of large cube = 6(5)² = 150 (unit)
Area of cuboid = 2 (1 × 1 + 1 × 125 + 125 × 1) = 502 sq.units
$\therefore$ Percentage increase in surface area

$$= \frac{502-150}{150} \times 100 = 234\frac{2}{3}\%$$

58. (1) Let the downstream and upstream speed be 3x and 5x.

Speed of the current = $3\frac{3}{4}$ km/hr

$$\Rightarrow \frac{5x-3x}{2} = \frac{15}{4} \text{ km/hr.} \Rightarrow x = \frac{15}{4} \text{ km/hr}$$

$\therefore$ Speed of the boat in still water

$$= \frac{5x+3x}{2} = 4x = \frac{4\times15}{4} \text{ km/hr} = 15 \text{ km/hr}$$

59. (4) Total CP of [25 kg + 35 kg] rice
$$= Rs. (25 \times 16.50 + 35 \times 24.50)$$
$$= Rs. 1270$$
SP of 25% profit = Rs. (1270×1.25) = Rs. 1587.5

$\therefore$ Required rate $= \dfrac{1587.5}{60} = Rs.26.45$ per kg

60. (1) Let the total no of students be 100 then failed students
in computer = 100 – 28 = 72
Fail students in commerce = 100 – 13 = 87
Student only failed in computer = 72 – 62 = 10
Student only failed in commerce = 87 – 62 = 25
Fail in both subjects = 62
Total failed students = 62 + 25 + 10 = 97
$\therefore$ Pass students = 100 – 97 = 3

Only in computed no of pass students $= \dfrac{10}{3} \times 9 = 30$

61. (2) Let $\theta = 0°$, then m = a and n = 0

$$(m+n)^{\frac{2}{3}} + (m-n)^{\frac{2}{3}} = a^{\frac{2}{3}} + a^{\frac{2}{3}} = 2a^{\frac{2}{3}}$$

62. (4) $x + \dfrac{1}{x} = p$

Squaring both sides,

$$x^2 + \left(\dfrac{1}{x}\right)^2 = p^2$$

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

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

Cubic both sides,

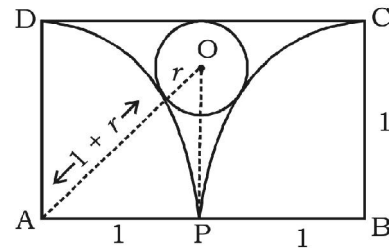$$\left(x^2 + \dfrac{1}{x^2}\right)^3 = (p^2 - 2)^3$$

or, $x^6 + \dfrac{1}{x^6} = p^6 - 6p^4 + 9p^2 - 2$

63. (2)
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Teaching staff    Non Teaching
   12, 000           5, 000
          \         /
           10,000
          /         \
   5, 000           2, 000
     5                2
     ↓ ×4             ↓ ×4
     20               8
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64. (2) Let radius of the circle is 'r' units OP = (1 – r),
OA = (1 + r) and AP = 1

In $\triangle AOP$; $OA^2 = AP^2 + OP^2$

$\Rightarrow (1 + r)^2 = 1^2 + (1 - r)^2$

$\Rightarrow r = \dfrac{1}{4}$ units

$\therefore$ Area of smaller circle $= \pi\left(\dfrac{1}{4}\right)^2 = \dfrac{\pi}{16}$ square units

Sum of the area of the quarter circles

$= \dfrac{\pi}{4} + \dfrac{\pi}{4} = \dfrac{\pi}{2}$ square units

Area of shaded region

$= 2 - \left(\dfrac{\pi}{16} + \dfrac{\pi}{2}\right) = 2 - \dfrac{9}{16}\pi$

$= 2 - \dfrac{9}{16} \times \dfrac{22}{7} = \dfrac{13}{56}$ sq. units

65. (2) Rectangle having, l = 6 unit, b = 5 unit.
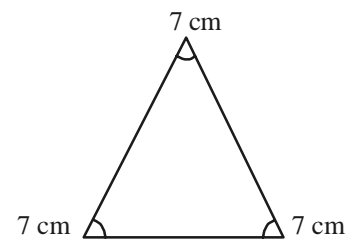Area = $l \times b = 6 \times 5 = 30$ sq. unit
New rectangle having l = 7, b = 4
Area = $l \times b = 7 \times 4 = 28$.

Ratio $= \dfrac{30}{28} = 15 : 14$

66. (3)

Area of region gazed

$= \dfrac{\angle A + \angle B + \angle C}{360°}(\pi R^2)$

$= \dfrac{180}{360}\left[\dfrac{22}{7} \times 7 \times 7\right] = 77$ sq. units

67. (1) Given that
$\sin \alpha + \sin \beta = a$ and   ...(i)
$\cos \alpha + \cos \beta = b$ ...(ii)

Squaring and adding them

$$a^2 + b^2 = \sin^2\alpha + 2\sin\alpha.\sin\beta$$

$$+ \cos^2\alpha + \cos^2\beta + 2\cos\alpha\cos\beta$$

$$a^2 + b^2 = 2 + 2\cos(\alpha - \beta)$$

$$\therefore \cos(\alpha - \beta) = \frac{a^2 + b^2 - 2}{2}$$

Again, squaring and subtracting them,
[equation (i) and (ii)]

$$b^2 - a^2 = \cos^2\alpha - \sin^2\alpha + \cos^2\beta - \sin^2\beta$$

$$+ 2[\cos\alpha\cos\beta - \sin\alpha\sin\beta]$$
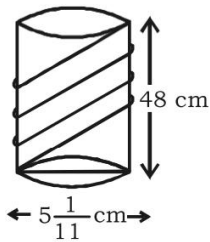
$$= \cos 2\alpha + \cos 2\beta + 2\cos(\alpha + \beta)$$

$$= 2\cos(\alpha + \beta)[\cos(\alpha - \beta) + 1]$$

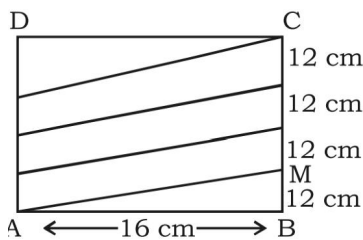$$= 2\cos(\alpha + \beta)\left[\frac{a^2 + b^2 - 2}{2} + 1\right]$$

$$= 2\cos(\alpha + \beta)\left[\frac{a^2 + b^2}{2}\right]$$

$$\therefore \cos(\alpha + \beta) = \frac{b^2 - a^2}{a^2 + b^2}$$

68. (4)

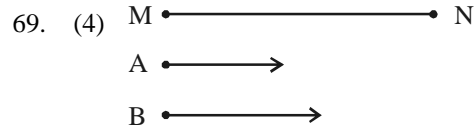The above figure, will look like the figure (below), when we open it.

The base circumference

$$= 2\pi r = 2 \times \frac{22}{7} \times \frac{56}{11} \times \frac{1}{2} = 16 \text{ cm}$$

$\therefore$ AM = length of one complete turn

$$= \sqrt{16^2 + 12^2} = 20 \text{ cm}$$

$\therefore$ Total length = 4 × 20 = 80 cm

69. (4)

Given, speed of A = 60 km/hr.
Distance travelled in 3 hr = 60 × 3 = 180 km
At 2 pm, Speed of B = 72 km/hr
Time difference = 3 hr.
Relative velocity = (72 – 60) = 12 km/hr

Now, Time – gap (meeting) $= \frac{180}{12} = 15$ hr. after they met.
They will meet at 2 pm + 15 hour = 5 am.

70. (3) Ratio of the amount of water filled in the cistern

$$= 1^2 : \frac{16}{9} : 4 = 9 : 16 : 36$$

Since 36 cubic unit of water is filled by the pipe of largest diameter in 6 minutes.
1 cubic unit of water is filled by the pipe of largest

diameter $= 61 \times \frac{3}{6}$

61 cubic unit of water is filled by the pipe largest

diameter in $\frac{61 \times 36}{61} = 36$ minutes.

71. (4) Total accidents
= 230 + 150 + 120 + 160 + 40 + 200 + 100 = 1000
Percentage of accidents involving two-wheelers to two wheelers

$$= \frac{230}{100} \times 100 = 23\%$$

Percentage of accidents involving two-wheelers to other objects

$$= \frac{770 \times 100}{1000} = 77\%$$

$\therefore$ Required difference = 77 – 23 = 54% less

72. (3) Two-wheelers + Cars + Buses + Stationary Vehicles
= 230 + 150 + 120 + 100
= 600 $\approx$ 60%

73. (4) Since 1000 $\equiv$ 360°
Sector angle for stationary vehicles.

$$= \frac{360}{1000} \times 100 = 36°$$

74. (1) Required percentage

$$= \frac{40 + 200}{1000} \times 100 = \frac{24000}{1000} = 24$$

75. (2) Required difference $= \frac{160 - 120}{1000} \times 100 = 4\%$