SSC CGL - 180725 GRAND TEST
HINTS AND SOLUTIONS
### ANSWER KEY

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

1. (1) $4 \Rightarrow 4^3 - 4^2 = 64 - 16 = 48$
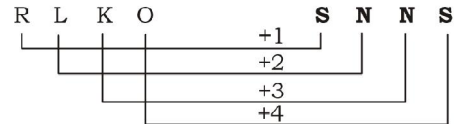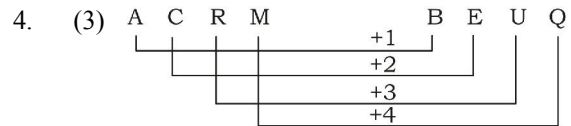 $5 \Rightarrow 5^3 - 5^2 = 125 - 25 = 100$

2. (3) As,
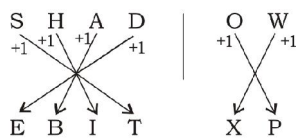
    Similarly,
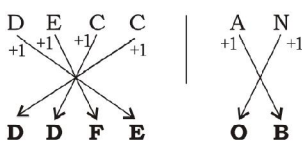
3. (3) $74 \Rightarrow 74 - (\text{Reverse }(47)) = 74 - 47 = 27$
    $86 \Rightarrow 86 - (\text{Reverse }(68)) = 86 - 68 = 18$

4. (3)

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

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

7. (3) Given time = 9 : 48
    Total minutes in 9 hrs 48 min. $= 60 \times 9 + 48 = 588$ min.
    Now we have,

 $$\frac{\text{Total min. in given time}}{2} - (\text{Given minutes} \times 6)$$

    $$= \frac{588}{2} - 48 \times 6 = 294 - 288 = 6°.$$

8. (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
    $= (X + 2X) = 3X = 45$.

9. (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

10. (3)
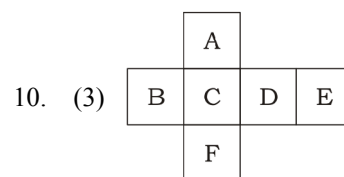
    So, C/E, A/F and B/D are opposite to each other.

11. (1)   No. of letters
    I like You   8   × 2 = 16
    I hate u   6   × 2 = 12

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. (1) $(15 - 12) + (10 - 9) = 4$
    $(28 - 12) + (16 - 20) = 12$
    Similarly, $(23 - 11) + (15 - 16) = 11$

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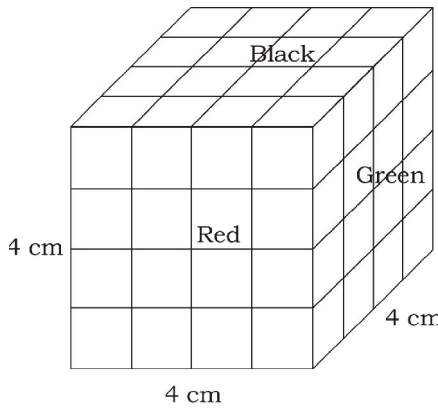
Number of small cubes having no face coloured
= $(x - 2)^3 = (4 - 2)^3 = 8$

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

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

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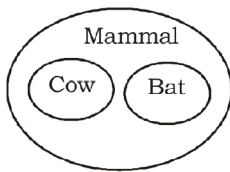1 and 3, 3 and 5, 5 and 7, 7 and 9, 9 and 11, ...
So, missing term = number formed by joining 11 and 13 = 1113.

18. (3)

0	6	24	60	120	210
1^3-1	2^3-2	3^3-3	4^3-4	5^3-5	6^3-6

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

19. (2) Only the child of my father means 'Abhisek' himself. This means the girl is the daughter of Abhisek. Hence, Abhisek's wife is the mother of the girl.
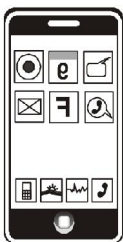
20. (2)

21. (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.

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

23. (2)

24. (3)

25. (4)

51. (3) Popoulation of Hindu in 2013
= 35% of 5 million = $= \dfrac{35}{100} \times 5000000 = 17,50,000$

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

53. (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

54. (3) Area of the base
= $\dfrac{1}{2}$ (sum of parallel sides) × perpendicular distance
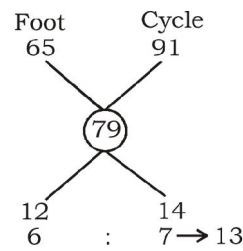= $\dfrac{1}{2}(14 + 8) \times 8 = 88$ sq. cm.
∴ Volume = Area of the base × height
⇒ $1056 = 88 \times h \Rightarrow h = \dfrac{1056}{88} = 12$ cm

55. (3) The minimum number of Bananas
= L.C.M of (6, 8, 10, 12, 15, 16) + 4 = 24 + 4 ⇒ 244

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

$\dfrac{T_1}{T_1} = \dfrac{6}{7}$	→ foot
	→ cycle=49Km

57. (4) $\sqrt{xy} = \sqrt{9 \times 16} = 12$ m

58. (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
∴ $ar(\triangle PQR) = \dfrac{1}{2} \times PR \times PQ = \dfrac{1}{2} \times 10 \times 24 = 120$ cm²

59. (2) Area of large cube = $6(5)^2 = 150$ (unit)

Area of cuboid = $2 (1 \times 1 + 1 \times 125 + 125 \times 1) = 502$ sq.units

∴ Percentage increase in surface area

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

60. (4) Divided by x,

$\dfrac{\dfrac{x^4}{x} + \dfrac{1}{x^2 \times x}}{\dfrac{x^2}{x} - \dfrac{3x}{x} + \dfrac{1}{x}} = \dfrac{x^3 + \dfrac{1}{x^3}}{x - 3 + \dfrac{1}{x}} = \dfrac{110}{2} = 55$

61. (2) $20\% - \dfrac{1}{5}$, $15\% - \dfrac{3}{20}$

Before discount   After discount

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

62. (2) ₹ 4960 is the amount of 3 years at rate of 3% annually,

then $x + \dfrac{x \times 8 \times 3}{100} = 4960$ or $\dfrac{124x}{100} = 4960$

∴ $x = \dfrac{4960 \times 100}{124} = 4000$

∴ Initial value of cow = 3000 + 4000 = ₹ 7000

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

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

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

∴ Speed of the boat in still water

$= \dfrac{5x + 3x}{2} = 4x = \dfrac{4 \times 15}{4}$ km/hr = 15 km/hr

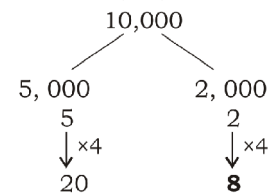64. (1) Let the number of filling pipes = x

∴ outlet pipes = (8 – x)

ATQ,

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

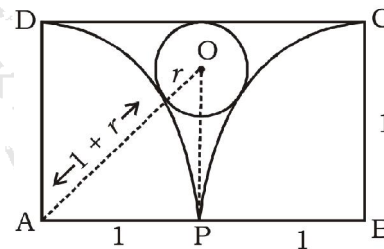$\Rightarrow 4x - 8 = 12 \Rightarrow 4x = 20 \Rightarrow x = 5$

Number of filling pipes = 5

65. (2)

Teaching staff   Non Teaching
12, 000   5, 000

10,000

5, 000   2, 000
5   2
↓×4   ↓×4
20   **8**

66. (4) $\angle$DCK = $\angle$FDG = 55º (corresponding)

∴ $\angle$ACE = $\angle$DCK = 55º (vertically opposite)

So, $\angle$AEC = 180º – (40º + 55º) = 85º

∴ $\angle$HAB = $\angle$AEC = 85º (corresponding)

Hence, x = 85º

67. (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

∴ Area of smaller circle $= \pi\left(\dfrac{1}{4}\right)^2 = \dfrac{\pi}{16}$ square units
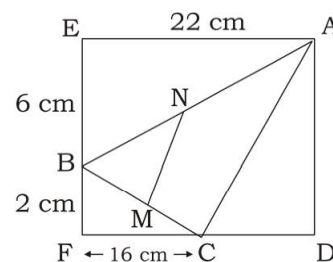
Sum of the area of the quarter circles

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

Area of shaded region

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

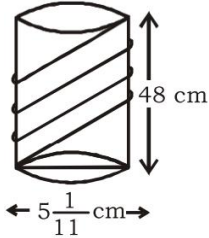$= 2 - \dfrac{9}{16} \times \dfrac{22}{7} = \dfrac{13}{56}$ sq. units

68. (2)
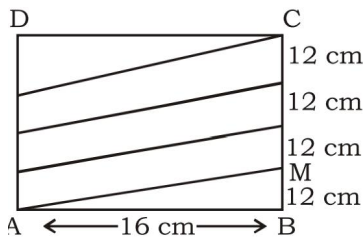
$AC^2 = CD^2 + AD^2 = 6^2 + 8^2 = 100$

$AC = 10$ cm

$MN = \dfrac{1}{2}AC = \dfrac{1}{2} \times 10 = 5$ cm

(By mid point theorem)

69. (4)

$5\dfrac{1}{11}$ cm

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

The base circumference

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

∴ AM = length of one complete turn

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

∴ Total length $= 4 \times 20 = 80$ cm

70. (1) $2\sin\alpha + 15\cos^2\alpha = 7$

$\Rightarrow 2\sin\alpha + 15(1 - \sin^2\alpha) = 7$

$\Rightarrow 2\sin\alpha + 15 - 15\sin^2\alpha = 7$

$\Rightarrow 15\sin^2\alpha - 2\sin\alpha - 8 = 0$

$\Rightarrow 15\sin^2\alpha - 12\sin\alpha + 10\sin\alpha - 8 = 0$

$\Rightarrow 3\sin\alpha(5\sin\alpha - 4) + 2(5\sin\alpha - 4) = 0$

$\Rightarrow (3\sin\alpha + 2)(5\sin\alpha - 4) = 0$

$\Rightarrow \sin\alpha = \dfrac{4}{5}$ and $\cosec\alpha = \dfrac{5}{4}$

∴ $\cot\alpha = \sqrt{\cosec^2\alpha - 1} = \sqrt{\dfrac{25}{16} - 1} = \sqrt{\dfrac{9}{16}} = \dfrac{3}{4}$

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

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

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

72. (4) Take $\alpha = 0°$

∴ $u_1 = 1^n = 0° = 1°$

∴ $u_6 = 1^6 = 6$ and $u_4 = 1^4 = 4$

∴ $2u_6 - 3u_4 + 1 = 2 \times 1 - 3 \times 1 + 1 = 0$

73. (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 $= 62 + 25 + 10 = 97$

∴ Pass students $= 100 - 97 = 3$

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

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

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

75. (1) Put the value of x, y and z as 1, 8 and 27 respectively

ATQ,

$(1 + 8 - 27)^3 + 27 \times 1 \times 8 \times 27$

$= (-18)^3 = 3^3 \times 2^3 \times 3^3 = (-18)^3 + (18)^3 = 0$

76. (4) 'encroach' will take 'on/upon' after it 'encroach on something' means 'to begin to affect or use too much of somebody's rights'.

77. (3) Remove 'will' as it is not used in 'if clause'.

78. (3) You assure (to tell someone in a very strong or definite way) someone of something.

87. (4) 'Just' an adverb comes after the helping verb and before the main verb.

88. (1) The formation of conditional sentence is-

If + sub + had + V_3, sub + would have + V_3.