SSC CGL - 170838 GRAND TEST
HINTS AND SOLUTIONS
### ANSWER KEY

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

1. (3) $(6 \times 6) - 1 = 35$
$(9 \times 6) - 1 = 53$

2. (1) Father is responsible for the existence of a child similarly, writer is responsible for the existence of a book.

3. (2) TAP $\xrightarrow{\text{Opposite}}$ PAT

DAM $\xrightarrow{\text{Opposite}}$ MAD

4. (4) As,

Similarly,
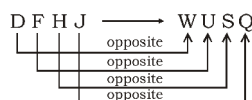
5. (1)

6. (2) Option (2) comprises only vowels whereas only consonants are present in rest of the options.

7. (1) 216 is a cube of even number whereas rest are cubes of odd number.
Example : $27 = (3)^3$, $125 = (5)^3$, $216 = (6)^3$, $343 = (7)^3$

8. (3) After observing each options we have,
(1) $(24 \times 2) - 2 = 46$
(2) $(32 \times 2) - 2 = 62$
(3) $(30 \times 2) - 4 = 56$
(4) $(38 \times 2) - 2 = 74$
So, option (3) is different.

9. (4) Sum of 1 st three numbers results in the fourth whereas option (4) is not satisfying the same.

10. (2)

11. (2) The letter 'R' of Doctor is missing in word DECOMPOSITION.

12. (1) Lucknow $\rightarrow$ Uttar Pradesh $\rightarrow$ India $\rightarrow$ Asia $\rightarrow$ World
    1   2   3   5   4

13. (3) 225 336 447 $\boxed{558}$ 669
   +111 +111 +111 +111

14. (4) Hari > Chaman > Satish
Vijay > Mukesh > Chaman > Satish.
Hence, we can say that Satish is smallest among all.

15. (1) Out of 12 questions, 6 questions have one option
so, Total no. of questions $= 6 + (6 \times 2) = 18$
As, Each questions has 4 sections
so, Total number of question (including different sections)
$= 18 \times 4 = 72$

16. (4) From option (4) we have,
$5 > 8 + 4 = 10 < 4 \times 8$
$\Rightarrow 5 \times 8 \div 4 < 10 - 4 + 8$
$= 5 \times 2 < 18 - 4 = 10 < 14$

17. (2)

18. (1)

19. (4) $(3)^2 + (5)^2 + (1)^2 = 35$
$(4)^2 + (7)^2 + (2)^2 = 69$
$(6)^2 + (3)^2 + (7)^2 = 94$

20. (1) $\sqrt{16} + \sqrt{25} = 9$
$\sqrt{49} + \sqrt{36} = 13$
$\sqrt{64} + \sqrt{81} = 17$

21. (4)

22. (4)

```
┌─────────────────────────┐
│     North America        │
│   ┌───────────────────┐  │
│   │      USA          │  │
│   │   ┌──────────┐    │  │
│   │   │  New     │    │  │
│   │   │  York    │    │  │
│   │   └──────────┘    │  │
│   └───────────────────┘  │
└─────────────────────────┘
```

23. (2)

```
  ⬭───────────────────────⬮
 ( (Sun)     (Moon)       )
  ⬮─────── Eclipse ───────⬯
```
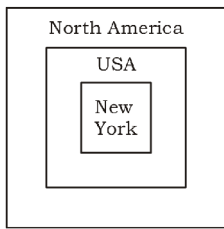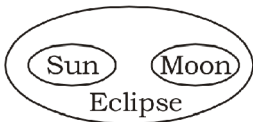
24. (3)

25. (3) $C \Rightarrow 44, 53$
$A \Rightarrow 42, 62, 62$
$L \Rightarrow 36, 65$
$M \Rightarrow 51$
$\therefore CALM \Rightarrow 44, 62, 65, 51$

51. (1) Let the numbers are a and b.
$\therefore b^3 - a^2 = b^2 \Rightarrow b^3 = a^2 + b^2$
$a.b = 300$ and $(a + b)^2 = 1600$
$\Rightarrow a^2 + b^2 + 2ab = 1600$
$\Rightarrow b^3 + 2 \times 300 = 1600$
$\Rightarrow b^3 = 1600 - 600 = 1000 \Rightarrow b = 10$
$\therefore ab = 300 \Rightarrow a \times 10 = 300 \Rightarrow a = 30$
$\therefore$ numbers a, b = 30, 10

52. (1) Let the side of regular polygon = x
$\Rightarrow$ each interior angle $= \dfrac{(2n-4) \times 90°}{n}$
ATQ,
$\dfrac{(2n-4) \times 90°}{n} = 2 \times 90 \times \dfrac{4}{5} \Rightarrow n = 10$

53. (3) Distance travelled by Ravi = (60 – 12) km = 48 km
and distance travelled by Ajay = (60 + 12) km = 72 km
Difference between the distance travelled by them
= (72 – 48) km = 24 km

Time required by Ravi $= \dfrac{24}{4}$ hr = 6 hr
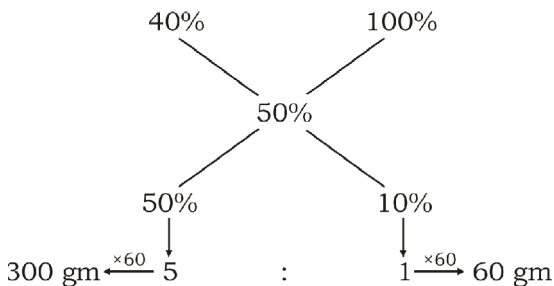
Speed of Ravi $= \dfrac{48}{6}$ km/hr = 8 km/hr

54. (3) The existing solution has 40% sugar.
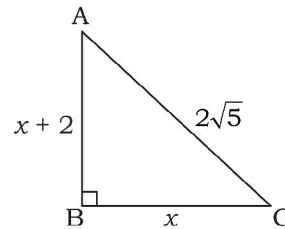And sugar is to be mixed, so the other solution has 100% sugar. So by alligation method:

```
      40%              100%
         \            /
            50%
         /            \
      50%              10%
       │                │
300 gm ←──── 5    :    1 ────→ 60 gm
       ×60                ×60
```

$\therefore$ The two mixture should be added in the ratio 5 : 1
$5x = 300$ gms
Therefore, required sugar $= \dfrac{300}{5} = 60$ gms

55. (1) In right angled $\triangle ABC$

```
         A
        /|
       / |
 x+2  /  |  2√5
     /   |
    /____|
   B  x  C
```

$\angle B = 90$, $BC = x$, $AB = x + 2$, $AC = 2\sqrt{5}$
$\therefore AB^2 + BC^2 = AC^2$
$\therefore (x + 2)^2 + x^2 = (2\sqrt{5})^2$
$\therefore x^2 + 4 + 4x + x^2 = 20$
$\Rightarrow 2x^2 + 4x = 16$
$\Rightarrow x^2 + 2x = 8 \Rightarrow x^2 + 2x - 8 = 0$
$\Rightarrow x^2 + 4x - 2x - 8 = 0 \Rightarrow (x + 4)(x - 2) = 0$
$\Rightarrow x + 4 \neq 0$ but $x - 2 = 0 \Rightarrow x = 2$

$\cos^2 A = \left(\dfrac{x+2}{2\sqrt{5}}\right)^2 = \left(\dfrac{2+2}{2\sqrt{5}}\right)^2 = \dfrac{16}{20} = \dfrac{4}{5}$

$\cos^2 C = \left(\dfrac{x}{2\sqrt{5}}\right)^2 = \left(\dfrac{2}{2\sqrt{5}}\right)^2 = \dfrac{1}{5}$

$\therefore \cos^2 A - \cos^2 C = \dfrac{4}{5} - \dfrac{1}{5} = \dfrac{3}{5}$

56. (3) Installment (I) = ₹ 1210, R = 10%
We know (for two installment)

$I = \dfrac{\text{Principle}}{\left(\dfrac{100}{100+R}\right) + \left(\dfrac{100}{100+R}\right)^2}$

$\Rightarrow 1210 = \dfrac{\text{Principle}}{\dfrac{10}{11} + \dfrac{100}{121}}$

$\Rightarrow \text{Principle} = 1210 \times \left(\dfrac{110+100}{121}\right) = \dfrac{1210 \times 210}{121}$

$\therefore \text{Principle} = ₹ 2100$

57. (3) $x + \dfrac{1}{x} = 2 \Rightarrow \left(x + \dfrac{1}{x}\right)^2 = 2^2$

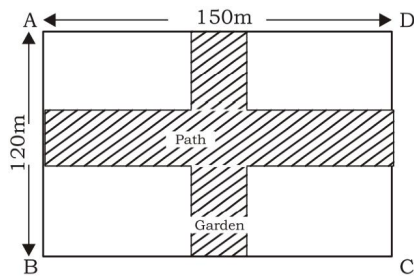$\therefore x^2 + \dfrac{1}{x^2} + 2 = 4 \Rightarrow x^2 + \dfrac{1}{x^2} = 2$

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

$$\Rightarrow (x^2)^3 + \left(\frac{1}{x^2}\right)^3 + 3.x^2.\frac{1}{x^2}\left(x^2 + \frac{1}{x^2}\right) = 8$$

$$\Rightarrow x^6 + \frac{1}{x^6} + 3 \times 1 \times 2 = 8$$

$$\Rightarrow x^6 + \frac{1}{x^6} = 8 - 6 = 2$$

58. (1) Area of two paths   = $10 \times (150 + 120 - 10)$
                = $10 \times 260 = 2600 \text{m}^2$

Cost of graveling the path = 2600×2 = ` 5200

59. (2) Sum of angles of regular pentagon = $(2n - 4) \times 90°$
     = $(2 \times 5 - 4) \times 90° = 540°$

$\Rightarrow$ each angle of regular pentagon $= \frac{540°}{5} = 108°$
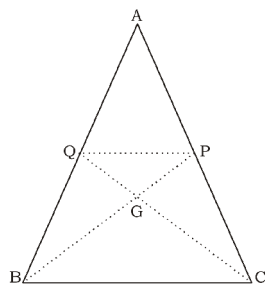
Sum of angle of regular hexagon
= $(2n - 4) \times 90°$
= $(2 \times 6 - 4) \times 90° = 720°$

$\Rightarrow$ each angle of regular hexagon $= \frac{720°}{6} = 120°$

$\therefore$ ratio between each angle = $108 : 120 = 9 : 10$

60. (2)

In the figure BP and CQ are medians meeting at point G.

$\Rightarrow \Delta BGC = \frac{1}{3} \times \Delta ABC \qquad \because QP = \frac{BC}{2}$

$\Rightarrow \Delta PGQ : \Delta BGC = 1 : 4$

$\Rightarrow \Delta PGQ : \frac{1}{3}\Delta ABC = 1 : 4$

$\Rightarrow \Delta PGQ : \Delta ABC = 1 : 12$

61. (2) Let Rate = R%, then time = R years
P = ` 5,00,000, S.I = ` 80,000

$80000 = \frac{500000 \times R \times R}{100} \Rightarrow R^2 = 16 \Rightarrow R = 4\%$

62. (2) HCF of 25.97 & 16.43 = 0.53

Required number of tiles $= \frac{25.97 \times 16.43}{0.53 \times 0.53} = 1519$

63. (2) $\frac{\cos\theta}{1 - \sin\theta} + \frac{\cos\theta}{1 + \sin\theta} = 4$

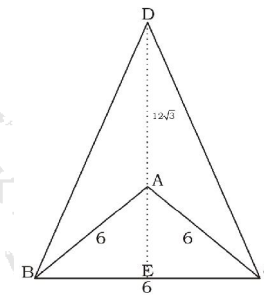$\frac{\cos\theta(1 + \sin\theta + 1 - \sin\theta)}{1 - \sin^2\theta} = 4$

$\frac{\cos\theta \times 2}{\cos^2\theta} = 4 \Rightarrow \frac{2}{\cos\theta} = \frac{4}{1}$

$\Rightarrow 4\cos\theta = 2 \Rightarrow \cos\theta = \frac{1}{2} = \cos 60°$

$\Rightarrow \cos\theta = \cos 60° \Rightarrow \theta = 60°$

64. (1)

In the figure, equlateral traingle ABC is the base of the pyramid.
Where AB = BC = CA = 6 cm
$\therefore$ Volume of the pyramid

$= \frac{1}{3} \times$ base area $\times$ height

$= \frac{1}{3} \times \frac{\sqrt{3}}{4} \times 6 \times 6 \times 12\sqrt{3} = 108 \text{ cm}^3$

65. (1) $a + \frac{1}{a} = 1 \Rightarrow \left(a + \frac{1}{a}\right)^3 = 1^3$

$\Rightarrow a^3 + \frac{1}{a^3} + 3 \times a \times \frac{1}{a} \times \left(a + \frac{1}{a}\right) = 1$

$\Rightarrow a^3 + \frac{1}{a^3} + 3 = 1 \Rightarrow a^3 + \frac{1}{a^3} = -2$

$\Rightarrow a^3 + \frac{1}{a^3} = -1 - 1 \Rightarrow a^3 = -1$

66. (1)

$5m + 5w = \frac{660}{3} = 220$

$\times 2 \quad 10m + 20w = \frac{3500}{5} = 700 \qquad \dots(ii)$

$10m + 10w = 220 \times 2 = 440 \quad \dots(i)$

[Substracting (i) from (ii)]

$10w = 700 - 440 = 260$

$\therefore 1w = \dfrac{260}{10} = `26$

Now, 5m + 5w = 220

$5m + 5 \times 26 = 220$

$\therefore 1m = \dfrac{220 - 130}{5} = \dfrac{90}{5} = `18$

Now, the required number of days

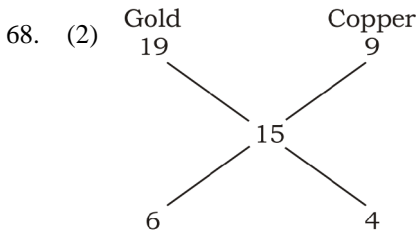$= \dfrac{1060}{(6 \times 18 + 4 \times 26)} = \dfrac{1060}{212} = 5$

67. (2) Let the distances be 2x, 3x and 5x km covered by Priyanka. Then,

Speed = $\dfrac{\text{Distance}}{\text{Time}}$

Required average speed

$= \dfrac{2x + 3x + 5x}{\dfrac{2x}{10} + \dfrac{3x}{15} + \dfrac{5x}{20}} = \dfrac{10x}{39x} \times 60$

$= \dfrac{200}{13} = 15\dfrac{5}{13} \text{ km/hr}$

68. (2)

```
Gold            Copper
 19               9
      \        /
        15
      /        \
  6               4
```

$\therefore$ Gold : Copper = 6 : 4 = 3 : 2

69. (4) Average of 48 numbers = 0

$\Rightarrow$ Sum of 48 numbers = 0 × 48 = 0

It is quite possible that 47 of these numbers may be positive & if their sum is R then 48th number is (– R).

70. (1) Descreased angles be 2x°, 3x°, 5x°

$\therefore$ Real angles would be (2x + 15)°, (3x + 15)°, (5x + 15)°

$\Rightarrow 2x + 15 + 3x + 15 + 5x + 15 = 180$

$\Rightarrow 10x + 45 = 180 \Rightarrow 10x = 135 \Rightarrow x = \dfrac{135}{10}$

$\therefore$ Gretest angle = (5x + 15)°

$= \left(5 \times \dfrac{135}{10} + 15\right)^0 = \left(\dfrac{135}{2} + 15\right)^0 = \left(\dfrac{165}{2}\right)^0$

$\therefore$ The radian measure $= \left(\dfrac{165}{2}\right)^0 \times \dfrac{\pi}{180°} = \dfrac{11}{24}\pi$

71. (3) Total number of people in all six cities

$= \dfrac{10000 \times 100}{20} = 50000$

Total population of city A

$= 50000 \times \dfrac{20}{100} = 10000$

Number of females in city A = 50% = 5000

72. (2) $\text{Total}_B = \dfrac{50000 \times 10}{100} = 5000$

Males are 30%, so females = 100 – 30 = 70%

Difference = 70 – 30 = 40%

Required answer $= \dfrac{5000 \times 40}{100} = 2000$

73. (2) $\text{Female}_E = 50000 \times \dfrac{10}{100} \times \left(\dfrac{100 - 60}{100}\right)$

$= 5000 \times \dfrac{2}{5} = 2000$

$\text{Female}_F = 50000 \times \dfrac{20}{100}\left(\dfrac{100 - 50}{100}\right)$

$= 10000 \times \dfrac{1}{2} = 5000$

Required % $= \dfrac{5000}{2000} \times 100 = 250\%$

74. (1) Total males

$= \dfrac{50000}{100 \times 100}(20 \times 50 + 10 \times 30 + 25 \times 20 + 15 \times 40 + 10 \times 60 + 20 \times 50)$

$= 5\{1000 + 300 + 500 + 600 + 600 + 1000\}$

$= 5 \times 4000 = 20,000$

75. (4) Total population in all six cities = 50,000

Total females in all six cities

= 50,000 – 20,000 = 30,000

Required % $= \dfrac{30000}{50000} \times 100 = 3 \times 20 = 60\%$

76. (2) Use 'is' after 'Priya', as the sentence is not interrogative

77. (2) Change 'awaiting' into 'waiting'.

78. (3) Add 'more' before 'amusing'. Both 'more amusing' and 'cleverer' must be in the same degree because both the adjectives are joined by a conjunction.

79. (4) Disposable things are 'use and throw' objects.

80. (1) Reconcile with (to adjust) Reconcile oneself to (to accept a situation reluctantly)

86. (1) The correct phrase is 'on the alert'. It means watchful and attentive for someone or something.

88. (1) Sentences starting with 'let's' take question tag 'shall we'