SSC CGL - 170723 GRAND TEST
HINTS AND SOLUTIONS

ANSWER KEY

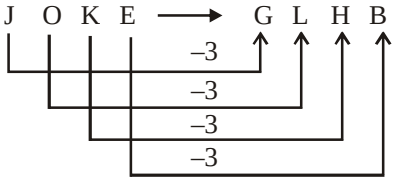
1	(3)	26	(3)	51	(3)	76	(2)
2	(1)	27	(2)	52	(4)	77	(2)
3	(4)	28	(2)	53	(1)	78	(1)
4	(1)	29	(4)	54	(1)	79	(1)
5	(4)	30	(2)	55	(4)	80	(2)
6	(4)	31	(2)	56	(3)	81	(1)
7	(2)	32	(1)	57	(4)	82	(1)
8	(1)	33	(4)	58	(4)	83	(1)
9	(4)	34	(3)	59	(3)	84	(1)
10	(4)	35	(1)	60	(4)	85	(1)
11	(1)	36	(2)	61	(4)	86	(1)
12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

1. (3) Option (1), $8-7+3\times5=35 \Rightarrow 7+8-3\times5=35$
$\Rightarrow 7+8-15\neq35$
Option (2), $7\times8+6-9=25 \Rightarrow 8\times7-6+9=25$
$\Rightarrow 56-6+9\neq25$
Option (3), $6+8\times2-7=0 \Rightarrow 6-7\times2+8=0$
$\Rightarrow 6-14+8=0$
Option (4), $8\times2+7-6=9 \Rightarrow 7\times2-8+6=9$
$\Rightarrow 14-14\neq9$

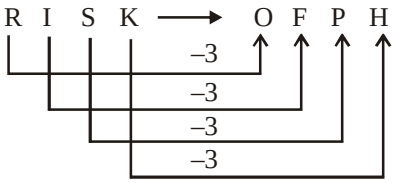
2. (1) The relation is :
$x : x^2 + 1$
$4 : (4)^2 + 1 \Rightarrow 4 : 17$
Similarly,
$7 : (7)^2 + 1 \Rightarrow 7 : 50$.

3. (4) Nephron is the basic structural and functional unit of the kidney. Similarly, neron is the basic structural and functional unit of the Central Nervous System.

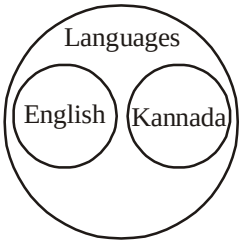
4. (1)



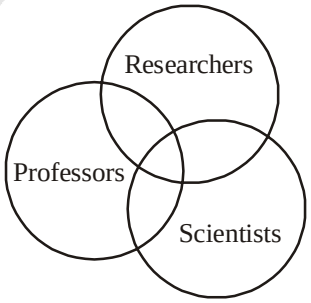
Similarly,



5. (4) English is different from Kannada. But both are included in the class languages.



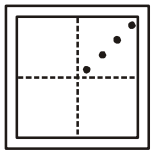
6. (4) Some professors may be researchers and vice-versa.
Some professors may be scientists and vice-versa.
Some researchers may be scientists and vice-versa.
Some professors who are researchers may be scientists.
Some researchers who are scientists may be professors.



7. (2) First Column $1 + 8 + 27 = 36 \Rightarrow 36 - 1^2 = 35$
Second Column $216 + 125 + 64 = 405$
$\Rightarrow 405 - 2^2 = 404$
Third Column $343 + 512 + ? = 1575 + 3^2$
$\Rightarrow 855 + ? = 1584$
$\Rightarrow ? = 1584 - 855 = 729$.

8. (1) First figure $(11 \times 12) - (6 \times 9) \Rightarrow 132 - 54 = 74$
Second figure $(14 \times 10) - (7 \times 8) \Rightarrow 140 - 56 = 84$

9. (4)

10. (4) 

11. (1) $2.5 \times 4 + 40 \div 20 - 12$
$10 + 2 - 12 = 0$

12. (2) $3 \xrightarrow{+7} 10 \xrightarrow{+7} \boxed{17}$
$5 \xrightarrow{+7} 12 \xrightarrow{+7} \boxed{19}$

$35 \longrightarrow 35 \longrightarrow 35$

13. (2) $A \xrightarrow{+2} C \xrightarrow{+2} E \xrightarrow{+2} G$
$I \xrightarrow{+1} J \xrightarrow{+2} L \xrightarrow{+1} M$
$O \xrightarrow{+2} Q \xrightarrow{+2} S \xrightarrow{+2} U$
$B \xrightarrow{+2} D \xrightarrow{+1} E \xrightarrow{+1} F$
$G \xrightarrow{+1} H \xrightarrow{+2} J \xrightarrow{+4} N$

14. (3) C is the father of B.
A is the wife of C.
B, E and F are sons of A and C.
D is a girl.
Male members ⇒ A, B, E and F.

15. (4) G A R N I S H
R G A I N H S
Similarly,
G E N I O U S
N G E O I S U

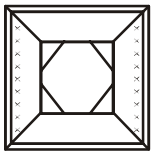
16. (1) B ⇒ 01, 13, 20, 32, 44
E ⇒ 56, 68, 75, 87, 99
A ⇒ 03, 10, 22, 34, 41
K ⇒ 57, 69, 76, 88, 95

Option	B	E	A	K
(1)	44	75	22	88
(2)	44	~~88~~	10	~~75~~
(3)	20	~~10~~	~~87~~	57
(4)	32	~~76~~	~~75~~	~~22~~

17. (2) $428 \Rightarrow 4 \times 2 = 8$
$338 \Rightarrow 3 \times 3 = \boxed{9}$
$326 \Rightarrow 3 \times 2 = 6$
$339 \Rightarrow 3 \times 3 = 9$

18. (3) Kidnap is different from other three words.

19. (3) $I \xrightarrow{-1} H \xrightarrow{+2} J$
$L \xrightarrow{-1} K \xrightarrow{+2} M$
$S \xrightarrow{+1} T \xrightarrow{-2} R$
$O \xrightarrow{-1} N \xrightarrow{+2} P$

20. (2) 

21. (3) There is no 'S' letter in the given word. Therefore, the word CONSCIENCE cannot be formed.
I N C O N V E N I E N C E
⇒ CONVINCE
I N C O N V E N I E N C E
⇒ CONVENE
I N C O N V E N I E N C E
⇒ CONCEIVE

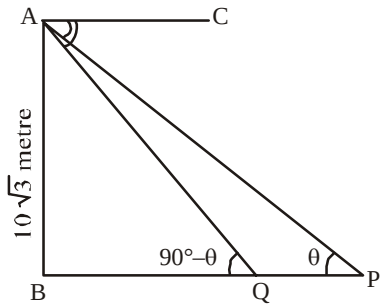
22. (3) Suppose the number of deer = d
And, number of peacocks = p
According to question $d + p = 80$ ....(i)
And, $4d + 2p = 200$
or, $2d + p = 100$ ....(ii)
From equation (i) and (ii)
$d = 20$
Therefore, number of peacocks = 80 – 20 = 60.

23. (2) Arrangement of words as per dictionary :
4. Convalesce
↓
3. Convenience
↓
2. Converge
↓
5. Converse
↓
1. Convince

24. (1) First Premise is Particular Affirmative (I-type).
Second Premise is Universal Affirmative (A-type).
All doctors are social workers.
↕
Some social workers are politicians.
A + I ⇒ No Conclusion.

25. (4) R O M E
M O R E
Similarly,
D A R E
R A D E

51. (3)



AB = Building = $10\sqrt{3}$ metre

PQ = 20 metre

BQ = x metre (let)

If $\angle APB = \theta$ then $\angle AQB = 90° - \theta$

From ΔABP,

$$\tan\theta = \frac{AB}{BP} = \frac{10\sqrt{3}}{x+20} \quad ...(i)$$

From ΔABQ, $\tan(90°-\theta) = \frac{AB}{BQ}$

$$\Rightarrow \cot\theta = \frac{10\sqrt{3}}{x} \quad ...(ii)$$

By multiplying both equations,

$$\tan\theta.\cot\theta = \frac{10\sqrt{3}}{x+20} \times \frac{10\sqrt{3}}{x}$$

$$\Rightarrow x^2 + 20x = 10\times10\times3$$

$$\Rightarrow x^2 + 20x - 300 = 0$$

$$\Rightarrow x^2 + 30x - 10x - 300 = 0$$

$$\Rightarrow x(x+30) - 10(x+30) = 0$$

$$\Rightarrow (x-10)(x+30) = 0$$

$\Rightarrow x=10, \quad x\neq -30$

$\therefore$ BP = 10 + 20 = 30 metre.

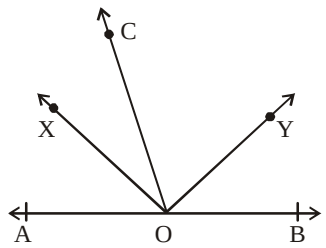
52. (4) $2\sin^2\theta + 3\cos^2\theta = 2\sin^2\theta + 2\cos^2\theta + \cos^2\theta$

$= 2(\sin^2\theta + \cos^2\theta) + \cos^2\theta$

$= 2 + \cos^2\theta$

$\therefore$ Least value = 2 + 0 = 2 $[\because \cos^2\theta \geq 0]$

53. (1)



OY is the bisector of $\angle AOC$.

$\therefore \angle AOC = 2\angle COX$

OX is the bisector of $\angle BOC$,

$\therefore \angle BOC = 2\angle COY$

$\therefore \angle AOC + \angle BOC = 2\angle COY + 2\angle COX = 180°$

$\Rightarrow 2(\angle COX + \angle YOC) = 180°$

$\Rightarrow \angle XOY = 90°$

$\therefore \angle AOX + \angle XOY + \angle BOY = 180°$

$\therefore \angle BOY = 180° - 90° - 20° = 70°$

54. (1) $2 - \cos^2\theta = 3\sin\theta.\cos\theta$

Dividing by $\cos^2\theta$

$$\frac{2}{\cos^2\theta} - 1 = \frac{3\sin\theta\cos\theta}{\cos^2\theta}$$

$$\Rightarrow 2\sec^2\theta - 1 = 3\tan\theta$$

$$\Rightarrow 2(1+\tan^2\theta) - 1 = 3\tan\theta$$

$$\Rightarrow 2\tan^2\theta + 2 - 1 = 3\tan\theta$$

$$\Rightarrow 2\tan^2\theta - 3\tan\theta + 1 = 0$$

$$\Rightarrow 2\tan^2\theta - 2\tan\theta - \tan\theta + 1 = 0$$

$$\Rightarrow 2\tan\theta(\tan\theta - 1) - 1(\tan\theta - 1) = 0$$

$$\Rightarrow (2\tan\theta - 1)(\tan\theta - 1) = 0$$

$$\Rightarrow \tan\theta = \frac{1}{2} \text{ or } 1.$$

55. (4) $\sin\theta + \cos\theta = \sqrt{2}\cos(90° - \theta)$

$\Rightarrow \sin\theta + \cos\theta = \sqrt{2}\sin\theta$

On squaring,

$$\cos^2\theta + \sin^2\theta + 2\cos\theta.\sin\theta = 2\sin^2\theta$$

$$\Rightarrow \cos^2\theta = \sin^2\theta - 2\cos\theta.\sin\theta$$

On dividing by $\sin^2\theta$,

$$\cot^2\theta = 1 - 2\cot\theta$$

$$\Rightarrow \cot^2\theta + 2\cot\theta - 1 = 0$$

$$\therefore \cot\theta = \frac{-2 \pm \sqrt{4+4}}{2} = \frac{-2+2\sqrt{2}}{2} = \sqrt{2} - 1$$

or $-(\sqrt{2}+1)$

56. (3) $x\sin^3\theta + y\cos^3\theta = \sin\theta.\cos\theta$

$$\Rightarrow (x\sin\theta).\sin^2\theta + (y\cos\theta)\cos^2\theta = \sin\theta.\cos\theta$$

$$\Rightarrow x\sin\theta.\sin^2\theta + x\sin\theta.\cos^2\theta = \sin\theta.\cos\theta$$

$$\Rightarrow x\sin\theta(\sin^2\theta + \cos^2\theta) = \sin\theta.\cos\theta$$

$$\Rightarrow x = \cos\theta$$

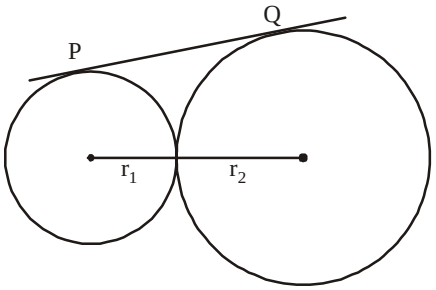
$\therefore x\sin\theta = y\cos\theta$

$\Rightarrow \cos\theta.\sin\theta = y\cos\theta$

$\Rightarrow y = \sin\theta$

$\therefore x^2 + y^2 = \cos^2\theta + \sin^2\theta = 1$

57. (4)



$r_1 + r_2 = 13$ cm
$r_2 - r_1 = 9 - 4 = 5$ cm

$PQ = \sqrt{(\text{distance between centres})^2 - (r_2 - r_1)^2}$

$= \sqrt{(13^2 - 5^2)} = 12$ cm.

$\therefore$ Area of square = 12 × 12 = 144 sq. cm.

58. (4) $\frac{(2n-4)\times 90^\circ}{n} = \frac{360^\circ}{n}\times 2$

$\Rightarrow (2n - 4) \times 90^\circ = 2 \times 360^\circ$

$\Rightarrow 2n - 4 = 8$

$\Rightarrow 2n = 4 \Rightarrow n = 6$

59. (3) Angle traced by hour hand in an hour = 30°

$\therefore$ Angle traced in $2\frac{1}{4}$ i.e. $\frac{9}{4}$ hours $= \frac{9}{4}\times 30^\circ = \frac{135^\circ}{2}$

Angle traced by minute hand in 60 minutes = 360°

$\therefore$ Angle traced in 15 minutes $= \frac{360}{60}\times 15 = 90^\circ$

\ Required angle $= 90^\circ - \frac{135^\circ}{2} = \frac{45^\circ}{2} = 22\frac{1}{2}^\circ$

60. (4) $x = (0.08)^2$, $y = \frac{1}{(0.08)^2} = \frac{10000}{64} = 156.25$

$z = (1 - 0.08)^2 - 1 = 1 + (0.08)^2 - 2 \times 0.08 - 1$

$= (0.08)^2 - 2 \times 0.08$

Clearly, $z < x < y$

61. (4) $x^4 + \frac{1}{x^4} = 23$

$\left(x^2 + \frac{1}{x^2}\right)^2 - 2 = 23$

$\Rightarrow \left(x^2 + \frac{1}{x^2}\right)^2 = 23 + 2 = 25$

$\therefore x^2 + \frac{1}{x^2} = 5$

$\therefore \left(x - \frac{1}{x}\right)^2 = x^2 + \frac{1}{x^2} - 2 = 5 - 2 = 3.$

62. (1) $x = \sqrt{6 + \sqrt{6 + \sqrt{6 + ...\infty}}}$

On squaring,

$x^2 = 6 + \sqrt{6 + \sqrt{6 + ...\infty}}$

$\Rightarrow x^2 = 6 + x$

$\Rightarrow x^2 - x - 6 = 0$

$\Rightarrow x^2 - 3x + 2x - 6 = 0$

$\Rightarrow x(x - 3) + 2(x - 3) = 0$

$\Rightarrow (x - 3)(x + 2) = 0$

$\Rightarrow x = 3$ because $x \neq -2$

63. (2) $\sec^4\theta - \sec^2\theta$

$= \sec^2\theta(\sec^2\theta - 1)$

$= (1 + \tan^2\theta)(1 + \tan^2\theta - 1) = \tan^2\theta + \tan^4\theta$

64. (2) $\frac{1}{3+\sqrt{5}} = \frac{3-\sqrt{5}}{(3+\sqrt{5})(3-\sqrt{5})} = \frac{3-\sqrt{5}}{9-5} = \frac{3-\sqrt{5}}{4}$

$\therefore 3 - \frac{3+\sqrt{5}}{4} - \frac{3-\sqrt{5}}{4} = \frac{12-3-\sqrt{5}-3+\sqrt{5}}{4} = \frac{6}{4} = \frac{3}{2}.$

65. (2) If $a + b + c = 0$

then $a^2 + b^2 + c^3 - 3abc = 0$.

66. (2) Points (a, b) and [(a + 3), (b + k)] will satisfy the equation.

$x - 3y + 7 = 0$

$\therefore a - 3b + 7 = 0$ ...(i)

and $a + 3 - 3(b + k) + 7 = 0$

$\Rightarrow a + 3 - 3b - 3k + 7 = 0$

$\Rightarrow a - 3b + 7 + 3 - 3k = 0$

$\Rightarrow 3 - 3k = 0 \Rightarrow 3k = 3$

$\Rightarrow k = \frac{3}{3} = 1$ [$\because a = -3, b + 70$]

67. (1) $39 + 48 + 51 + 63 + 75 + 83 + x + 69 = 60 \times 8$

$\Rightarrow 428 + x = 480$

$\Rightarrow x = 480 - 428 = 52.$

68. (1) $\because 30\% \cong$ Rs.30

$\therefore 100\% \cong$ Rs.100

$\therefore$ New S.P. = 100 – 30 = 70.

69. (4) $\frac{\frac{2}{3}\pi r_1^3}{\frac{2}{3}\pi r_2^3} = \frac{6.4}{21.6}$

$$\Rightarrow \frac{\pi r_1^3}{\pi r_2^3} = \frac{6.4}{21.6} = \left(\frac{4}{6}\right)^3 = \left(\frac{2}{3}\right)^3$$

$$\Rightarrow \frac{r_1}{r_2} = \frac{2}{3}$$

70. (4) If the number of females be x, then, number of males = 15000 – x

$$\therefore x \times \frac{10}{100} + (15000 - x) \times \frac{8}{100} = 16300 - 15000$$

$$\Rightarrow 10x + 120000 - 8x = 1300 \times 100$$

$$\Rightarrow 2x = 130000 - 120000 = 10000$$

$$\Rightarrow x = 5000$$

71. (3) Relative speed = 11 – 10 = 1 kmph
Distance covered in 6 minutes

$$= \frac{1000}{60} \times 6 \text{ metre} = 100 \text{ metre}$$

$\therefore$ Remaining distance = 200 – 100 = 100 metre

72. (2) 65) 75070 (1154
65
100
65
357
325
320
260
60

$\therefore$ Required number = 75070 + (65 – 60) = 75075.

73. (4) According to the question, $\frac{n}{2} + \frac{n}{4} + \frac{n}{5} + 7 = n$

$$\Rightarrow \frac{10n + 5n + 4n}{20} + 7 = n$$

$$\Rightarrow \frac{19n}{20} + 7 = n \Rightarrow n - \frac{19n}{20} = 7 \Rightarrow \frac{n}{20} = 7$$

$\Rightarrow n = 20 \times 7 = 140.$

74. (3) $675 = 5 \times 5 \times 3 \times 3 \times 3 = 3^3 \times 5^2$
$\therefore$ Required number = 5.

75. (1) 35 – 18 = 17
45 – 28 = 17
55 – 38 = 17
i.e. difference between the divisor and corresponding remainder is same.
LCM of 35, 45 and 55 = 3465
$\therefore$ Required number = 3465 – 17 = 3448.

76. (2) Here, indefinite article i.e. about a plane crash should be used. No particular incident is evident here.

77. (2) With a view to should be followed by gerund i.e. surveying.

78. (1) Here, time period is given. Hence, Past Perfect Continuous i.e. It had been lying ..... should be used.

79. (1) **Dependent on** = needing somebody/ something in order to survive or be successful; affected or decided by something.

80. (2) **Take your leave** = to say good bye.

81. (1) The word **Abnormal (Adjective)** means : unusual, irregular; unnatural; different from what is usual.
Look at the sentence:
They thought his behaviour was abnormal.

82. (1) The word **Venal (Adjective)** means : corrupt; prepared to do dishonest or immoral thing in return for money.
Look at the sentence :
Venal leaders should be denied vote.

83. (1) The word **Conjurer (Noun)** means : a person who performs magic tricks; magician.

84. (1) The word **Debacle (Noun)** means : a situation that is a complete failure and causes embarrassment.

85. (1) The word **Abusive (Adjective)** means : expressing praise or admiration.

86. (1) **Feel pulse** = to try to know someone's views.

87. (1) **Take somebody to task =** to criticize somebody strongly for something they have done.

88. (4) **Have/ keep something up your sleeve** = to keep a plan or an idea secret until you need to use it.

89. (3) Gentry is plural in number.

94. (4) **Rhythm** = a strong regular repeated pattern of sounds or movements.

95. (2) **Indigenous** = native; belonging to a particular place.