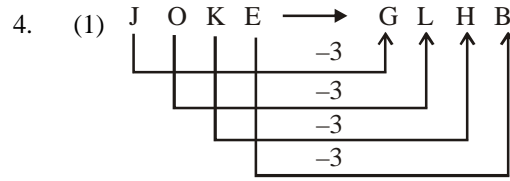


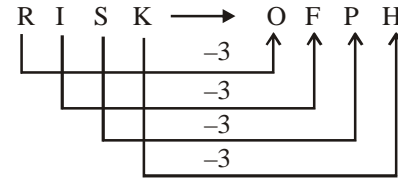


SSC CGL - GRAND TEST - CGL-170202
HINTS AND SOLUTIONS

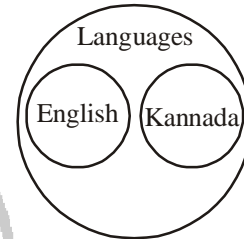
1	(3)	26	(3)	51	(3)	76	(2)
2	(1)	27	(2)	52	(4)	77	(2)
3	(4)	28	(2)	53	(1)	78	(1)
4	(1)	29	(4)	54	(1)	79	(1)
5	(4)	30	(2)	55	(4)	80	(2)
6	(4)	31	(2)	56	(3)	81	(1)
7	(2)	32	(1)	57	(4)	82	(1)
8	(1)	33	(4)	58	(4)	83	(1)
9	(4)	34	(3)	59	(3)	84	(1)
10	(4)	35	(1)	60	(4)	85	(1)
11	(1)	36	(2)	61	(4)	86	(1)
12	(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)



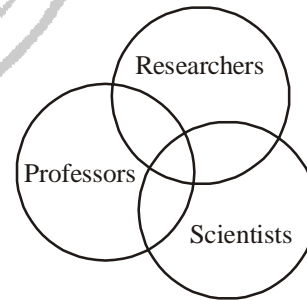
Similarly,



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.

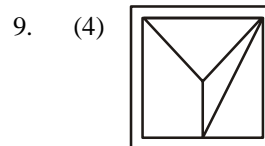


1. (3) Option (1), $8 - 7 + 3 \times 5 = 35 \Rightarrow 7 + 8 - 3 \times 5 = 35$
 $\Rightarrow 7 + 8 - 15 \neq 35$
 Option (2), $7 \times 8 + 6 - 9 = 25 \Rightarrow 8 \times 7 - 6 + 9 = 25$
 $\Rightarrow 56 - 6 + 9 \neq 25$
 Option (3), $6 + 8 \times 2 - 7 = 0 \Rightarrow 6 - 7 \times 2 + 8 = 0$
 $\Rightarrow 6 - 14 + 8 = 0$
 Option (4), $8 \times 2 + 7 - 6 = 9 \Rightarrow 7 \times 2 - 8 + 6 = 9$
 $\Rightarrow 14 - 14 \neq 9$

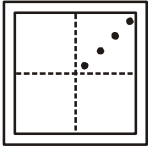
2. (1) The relation is :
 $x : x^2 + 1$
 $4 : (4)^2 + 1 \Rightarrow 4 : 17$
 Similarly,
 $7 : (7)^2 + 1 \Rightarrow 7 : 50.$

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

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 $(14 \times 10) - (7 \times 8) \Rightarrow 140 - 56 = 84$



10. (4)



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

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

$35 \longrightarrow 35 \longrightarrow 35$

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 \Rightarrow A, B, E and F.

15. (4) $\begin{matrix} G & A & R & N & I & S & H \\ & \swarrow & \searrow & \swarrow & \searrow & \swarrow & \searrow \\ R & G & A & I & N & H & S \end{matrix}$
 Similarly,

$\begin{matrix} G & E & N & I & O & U & S \\ & \swarrow & \searrow & \swarrow & \searrow & \swarrow & \searrow \\ N & G & E & O & I & S & U \end{matrix}$

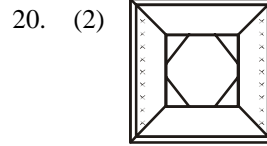
16. (1) $B \Rightarrow 01, 13, 20, 32, 44$
 $E \Rightarrow 56, 68, 75, 87, 99$
 $A \Rightarrow 03, 10, 22, 34, 41$
 $K \Rightarrow 57, 69, 76, 88, 95$

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) $428 \Rightarrow 4 \times 2 = 8$
 $338 \Rightarrow 3 \times 3 = 9$
 $326 \Rightarrow 3 \times 2 = 6$
 $339 \Rightarrow 3 \times 3 = 9$

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

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



21. (3) There is no 'S' letter in the given word. Therefore, the word CONSCIENCE cannot be formed.

$I \ N \ \boxed{C \ O \ N \ V \ E \ N \ I} \ E \ N \ \boxed{C} \ E$
 \Rightarrow CONVINCE

$I \ N \ \boxed{C \ O \ N \ V \ E \ N \ I} \ \boxed{E} \ N \ C \ E$
 \Rightarrow CONVENE

$I \ N \ \boxed{C \ O \ N \ V \ E} \ N \ \boxed{I} \ E \ N \ \boxed{C} \ E$
 \Rightarrow 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 = $80 - 20 = 60$.

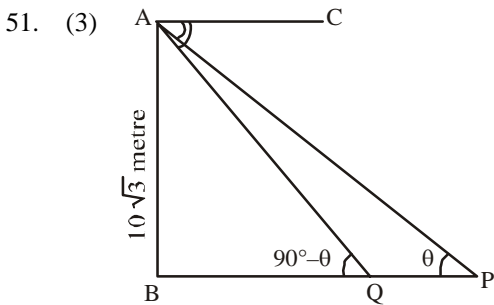
23. (2) Arrangement of words as per dictionary :

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.

\swarrow
 Some social workers are politicians.
 $A + I \Rightarrow$ No Conclusion.

25. (4) $\begin{matrix} R & O & M & E \\ & \swarrow & \searrow & \downarrow \\ M & O & R & E \end{matrix}$
 Similarly,
 $\begin{matrix} D & A & R & E \\ & \swarrow & \searrow & \downarrow \\ R & A & D & E \end{matrix}$



AB = Building = $10\sqrt{3}$ metre
 PQ = 20 metre
 BQ = x metre (let)
 If $\angle APB = \theta$ then $\angle AQB = 90^\circ - \theta$
 From $\triangle ABP$,

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

From $\triangle ABQ$, $\tan(90^\circ - \theta) = \frac{AB}{BQ}$

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

By multiplying both equations,

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

$$\Rightarrow x^2 + 20x = 10 \times 10 \times 3$$

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

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

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

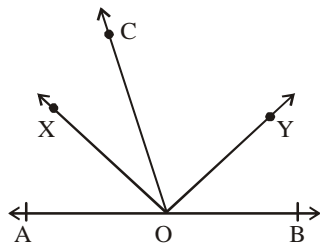
$$\Rightarrow (x-10)(x+30) = 0$$

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

$$\therefore BP = 10 + 20 = 30 \text{ metre.}$$

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 $\angle BOC$,

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

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

$$\Rightarrow 2(\angle COX + \angle COY) = 180^\circ$$

$$\Rightarrow \angle XOY = 90^\circ$$

$$\therefore \angle AOX + \angle XOY + \angle BOY = 180^\circ$$

$$\therefore \angle BOY = 180^\circ - 90^\circ - 20^\circ = 70^\circ$$

54. (1) $2 - \cos^2 \theta = 3\sin \theta \cdot \cos \theta$
 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) $\sin \theta + \cos \theta = \sqrt{2} \cos(90^\circ - \theta)$

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

On squaring,

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

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

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

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

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

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

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

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

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

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

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

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

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

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

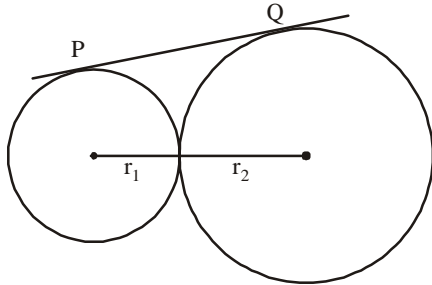
$$\Rightarrow y = \sin \theta$$

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

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

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

57. (4)



$$r_1 + r_2 = 13 \text{ cm}$$

$$r_2 - r_1 = 9 - 4 = 5 \text{ cm}$$

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

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

$$\therefore \text{Area of square} = 12 \times 12 = 144 \text{ sq. cm.}$$

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

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

$$\Rightarrow 2n - 4 = 8$$

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

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

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

$$\text{Angle traced by minute hand in 60 minutes} = 360^\circ$$

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

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

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

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

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

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

On squaring,

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

$$\Rightarrow x^2 = 6 + x$$

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

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

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

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

$$\Rightarrow x = 3 \text{ because } x \neq -2$$

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

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

$$x - 3y + 7 = 0$$

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

$$\text{and } a + 3 - 3(b + k) + 7 = 0$$

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

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

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

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

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

$$\Rightarrow 428 + x = 480$$

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

68. (1) $\therefore 30\% \cong \text{Rs. } 30$

$$\therefore 100\% \cong \text{Rs. } 100$$

$$\therefore \text{New S.P.} = 100 - 30 = 70.$$

69. (4) $\frac{\frac{2}{3}\pi_1^3}{\frac{2}{3}\pi_2^3} = \frac{6.4}{21.6}$



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

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

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

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

$$\therefore \text{Remaining distance} = 200 - 100 = 100 \text{ metre}$$

72. (2) 65) 75070 (1154

$$\begin{array}{r} 65 \\ 100 \\ \hline 65 \\ 357 \\ \hline 325 \\ 320 \\ \hline 260 \\ 60 \end{array}$$

$$\therefore \text{Required number} = 75070 + (65 - 60) = 75075.$$

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) $675 = 5 \times 5 \times 3 \times 3 \times 3 = 3^3 \times 5^2$

$$\therefore \text{Required number} = 5.$$

75. (1) $35 - 18 = 17$

$$45 - 28 = 17$$

$$55 - 38 = 17$$

i.e. difference between the divisor and corresponding remainder is same.

$$\text{LCM of } 35, 45 \text{ and } 55 = 3465$$

$$\therefore \text{Required number} = 3465 - 17 = 3448.$$

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.