SSC CGL - 210009 GRAND TEST
HINTS AND SOLUTIONS

ANSWER KEY

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

1. (3) Wine is made from Grapes and Vodka is made from potatoes.

2. (4) Liberty is opposite to Slavery and Danger is opposite to safety.

3. (3) Net is required to Trap and money is required to Trade.

4. (2)

29 : 62 :: 218 : **341**

$3^3 + 2$ $4^3 - 2$ $6^3 + 2$ $7^3 - 2$

5. (1)

M K Q O
−1 +3 −1 +3
L N P R

Y S U W
−1 +3 −1 +3
X V T Z

6. (1) All except mechanic help in building a house.

7. (1) Each of the number except 140 is a multiple of 120.

8. (4)

B E G   K N P   W Z B   **J L N**
(+2 top, +3 bottom for first three; +2 for last)
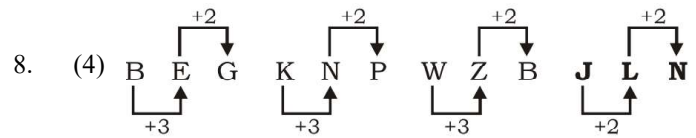
9. (3) The letters at the third and sixth places are repeated thrice alternately to code BOMBAY as MYMYMY. Similarly, the letters at the third and sixth places are repeated thrice alternately to code DISPUR as SRSRSR.

10. (1) "The terms of the given series are 3×1^2, 3×2^2, 3×3^2, 3×4^2, 3×5^2, 3×6^2, ...
So, missing term = $3 \times 7^2 = 3 \times 49 = 147$

11. (1) The pattern is -
$-1, \times 10 + 1, -1, \times 10 + 1, -1, \times 10 + 1, ...$
So, missing term = $10 \times 10 + 1 = 101$.

12. (1)
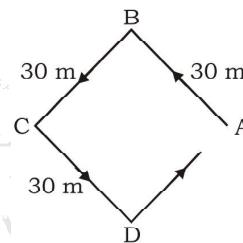
The movements of the girl are as shown in Fig.
(A to B, B to C, C to D, D to A).
Clearly, she is finally moving in the direction DA i.e. North east.

13. (3) Let ascent of the monkey in 1 hour
= (30 – 20) = 10 feet.
So, the monkey ascends 90 feet in 9 hours i.e., 5 p.m.
Clearly, in the next 1 hour i.e., till 6 p.m. the monkey ascends remaining 30 feet to touch the flag.

14. (2) Number of persons between Arun and Mukesh
= 50 – (10 + 25) = 15
Since Maha lies in middle of these 15 persons, so Maha's position is 8th from Arun i.e. 18th from the front.

15. (1) Given:- $9 \div 8 \times 7 + 5 - 10$
After replacing the signs as per the given details.

$9 - 8 \div 7 \times 5 + 10 = 9 - \dfrac{8}{7} \times 5 + 10 = 9 - \dfrac{40}{7} + 10$

$= 19 - \dfrac{40}{7} = \dfrac{133 - 40}{7} = \dfrac{93}{7} = 13.3$.

16. (2) $3 \times 4 + 3 = 15$
$7 \times 5 + 3 = 38$
So, missing number = $3 \times 5 + 3 = 18$

17. (1) $2 \times 1 + 1 = 3$
$14 \times 7 + 7 = 105$
Let the missing number in the third column be x.
Then, $x \times 9 + 9 = 117 = 9x = 108$ or $x = 12$

18. (2)
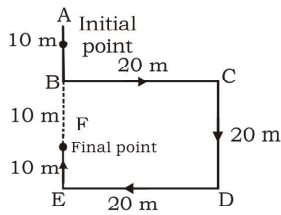
The movements of Surya from A to F are as shown in Fig.

Clearly, Surya's distance from starting point A

= AF = (AB + BF)

= AB + (BE − EF)

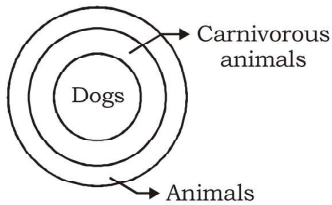= AB + (CD − EF)

= [10 + (20 − 10)] = (10 + 10) m = 20 m.

Also, F lies to the South of A.

So, Surya is 20 metres to the south of his starting point

19. (1)

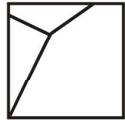All the dogs belong to animals in which some dogs are flesh eater but not all.

20. (2) 1.12.1991 is the first Sunday of December 1991. So, 3.12.1991 is the first Tuesday of the month.

Clearly, 10.12.1991, 17.12.1991, 24.12.1991 and 31.12.1991 are also Tuesdays.

So, 24.12.1991 is the fourth Tuesday.

21. (4)

22. (3) In a usual dice, the sum of the numbers on any two opposite faces is always 7. Thus, 1 is opposite to 6, 2 is opposite to 5 and 3 is opposite to 4.

Consequently, when 4, 3, 1 and 5 are the numbers on the top faces, then 3, 4, 6 and 2 respectively are the numbers on the faces touching the ground. The sum of these numbers = 3 + 4 + 6 + 2 = 15.

23. (1)

24. (4) Go on subtracting 24, 21, 18, 15, 12, 9 from the numbers to get the next number.

190 − 24 = 166

166 − 21 = 145

145 − 18 = 127 [Here, 128 is placed instead of 127]

127 − 15 = 112

112 − 12 = 100 ... and so on.

Therefore, 128 is wrong.

25. (1) Word: MISUNDERSTAND

Let's check all the options:

(1) TENT ⇒ It can't be formed as it requires 2 T's.
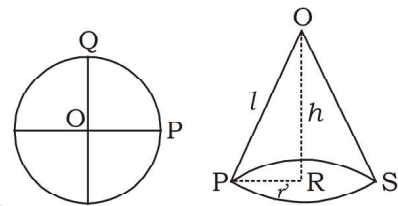
(2) SEND ⇒ It can be formed.

(3) SENT ⇒ It can be formed.

(4) MEND ⇒ It can be formed.

51. (3) LCM of 4, 5, 6, 7 and 8 = 840

Let required number be 840 K + 2 which is multiple of 13.

∴ Required number = 840 × 3 + 2 = 2520 + 2 = 2522

52. (2) The quadrant POQ of the circle is folded in such a way that the arc PQ form the base of the cone. Radii OP and OQ form slant height of the cone and they will coincide.

Arc PQ $= \left(\dfrac{1}{4}\right)2\pi r = \dfrac{1}{4} \times 2 \times \dfrac{22}{7} \times 14$ cm $= 22$ cm

Circumference of the base of the cone = Arc PQ.

or, $2\pi r' = 22$

(where r' = radius of the base of the cone)

or, $r' = \dfrac{22}{2\pi} = \dfrac{22}{2 \times \dfrac{22}{7}} = \dfrac{7}{2}$ cm

Slant height of the cone,

OP = radius of the circle

or, $l = 14$ cm

Height of the cone,

$h = \sqrt{(l)^2 - (r')^2}$

or, $h = \sqrt{(14)^2 - \left(\dfrac{7}{2}\right)^2} = \sqrt{\dfrac{735}{4}}$ cm $= \dfrac{1}{2}\sqrt{735}$ cm

Volume of the cone $= \dfrac{1}{3}\pi(r')^2 h$

$= \dfrac{1}{3} \times \dfrac{22}{7} \times \left(\dfrac{7}{2}\right)^2 \times \dfrac{\sqrt{735}}{2}$ cm^3

$= \dfrac{77}{12}\sqrt{735}$ cm$^3 = 174$ cm^3 (Approx.)

53. (1) The digit in unit's place = unit's digit in the product $1 \times 2 \times 3 \times .... \times 9 = 0$

54. (1) $5\tan\theta = 4 \Rightarrow \tan\theta = \dfrac{4}{5} = \dfrac{\text{Perpendicular}}{\text{Base}}$

Now, $\dfrac{5\sin\theta - 3\cos\theta}{5\sin\theta + 3\cos\theta} = \dfrac{5\tan\theta - 3}{5\tan\theta + 3}$

$= \dfrac{5\times\dfrac{4}{5} - 3}{5\times\dfrac{4}{5} + 3} = \dfrac{1}{7}$

55. (2) $q(p^2 - 1)$

$= (\sec\theta + \mathrm{cosec}\theta)\{(\sin\theta + \cos\theta)^2 - 1\}$

$= \left(\dfrac{1}{\cos\theta} + \dfrac{1}{\sin\theta}\right)\{\sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta - 1\}$

$= \left(\dfrac{\sin\theta + \cos\theta}{\cos\theta\sin\theta}\right)(1 + 2\sin\theta\cos\theta - 1)$

$= \left(\dfrac{\sin\theta + \cos\theta}{\cos\theta\sin\theta}\right)(2\sin\theta\cos\theta)$

$= 2(\sin\theta + \cos\theta) = 2p.$

56. (4)

	Speed	:	Time
Actual →	5		4
New →	4		5

$\Big)$ +1

1 unit = 15 min

Actual time = 60 min

57. (1) Let the initial speed of the train be x km/h and distance be d km

Condition (i) difference in time

1 unit = 2 hr 20 min

2 unit = 4 hr 40 min

Condition (ii)

1 unit = 2 hr 32 min

2 unit = 5 hr 4 min

difference in time = 24 min

Speed $= \dfrac{D}{T} = \dfrac{18}{24}$

Speed $= \dfrac{18}{24}\times 60 = 45\,\text{km/hr.}$

Distance $= T \times V = 45\left(4 + \dfrac{2}{3}\right) = 45\times\dfrac{14}{3} = 210\,\text{km}$

∴ total distance = 300 km

58. (2) $10\% = \dfrac{1}{10}$

Loan		Instalment
$10_{\times 11}$	——	$11_{\times 11}$
100	——	121
210	——	121

∴ Required sum = ` 121

59. (3) $\dfrac{\sin 2\theta + \sin\theta}{\cos 2\theta + \cos\theta + 1} = \dfrac{2\sin\theta\cdot\cos\theta + \sin\theta}{2\cos^2\theta - 1 + \cos\theta + 1}$

$= \dfrac{\sin\theta(2\cos\theta + 1)}{2\cos^2\theta + \cos\theta} = \dfrac{\sin\theta(2\cos\theta + 1)}{\cos\theta(2\cos\theta + 1)} = \dfrac{\sin\theta}{\cos\theta}$

$= \tan\theta$

60. (2) In condition-I

Let the principal be x

Amount = 3x

∴ Interest = 2x

Time = 20 years

$\therefore I = \dfrac{PRT}{100}\times 2x = \dfrac{x\times R\times 20}{100}$

∴ R = 10%.

In condition-II

I = x

P = x

R = 10

T = ?

$\therefore I = \dfrac{PRT}{100}\times x = \dfrac{x\times 10\times T}{100}$

∴ T = 10 years

61. (2) C.P of article be

₹ 1000

He takes ⟋ 10% ⟍ He gave

1100   900

$\therefore \text{Profit \%} = \dfrac{200}{900} = 22\dfrac{2}{9}\%$

62. (3) $\dfrac{x + \dfrac{1}{x}}{2} = V \Rightarrow x + \dfrac{1}{x} = 2V$

Required average

$= \dfrac{x^2 + \dfrac{1}{x^2}}{2} = \dfrac{\left(x + \dfrac{1}{x}\right)^2 - 2}{2} = \dfrac{4V^2 - 2}{2}$

$= 2V^2 - 1$

63. (3) $\dfrac{5}{1400}\times(6m + 5c) = \dfrac{8}{3040}\times(8m + 7c)$

$\Rightarrow 2m = 3c$

$\dfrac{5}{1400}\times(6m + 5c) = \dfrac{D}{720}\times(4m + 3c)$

$\Rightarrow \dfrac{5}{1400}\times(9c + 5c) = \dfrac{D}{720}\times(6c + 3c)$

∴ D = 4 days

64. (1) $10\% = \dfrac{1}{10}$, $25\% = \dfrac{1}{4}$

$SP_1 + SP_2 = 1710$ [Given]

	Ist		IInd
CP	10	:	$4_{\times 2}$
SP	9	:	$5_{\times 2}$
P/L	-1	:	$+1_{\times 2}$

Total selling price $= (9 + 10) = 19$ units
ATQ,
19 units $= 1710$

1 unit $= \dfrac{1710}{19} = ` 90$

Total profit $= (2 - 1) \times 90 = ` 90$

65. (3) $\because 1 + 2 + 3 + ... + n = \dfrac{n(n+1)}{2}$

$\therefore 1 + 2 + 3 + ... + 25 = \dfrac{25(25+1)}{2} = 25 \times 13$

Hence, 13 is a factor of required sum.

66. (2) $5^{\sqrt{x}} + 12^{\sqrt{x}} = 13^{\sqrt{x}}$
We know that $5^2 + 12^2 = 13^2$

[Pythagorean Triplet]

$\therefore \sqrt{x} = 2 \Rightarrow x = 2^2 = 4$

67. (2) As BC∥AD and the diagonals of a trapezium divide each other proportionally.

So, $\dfrac{AO}{OC} = \dfrac{BO}{OD}$

$\Rightarrow \dfrac{3x-1}{5x-3} = \dfrac{2x+1}{6x-5}$

$\Rightarrow (3x-1)(6x-5) = (5x-3)(2x+1)$
$\Rightarrow 18x^2 - 15x - 6x + 5 = 10x^2 + 5x - 6x - 3$
$\Rightarrow 8x^2 - 20x + 8 = 0$
$\Rightarrow 4x^2 - 10x + 4 = 0$
$\Rightarrow 4x^2 - 8x - 2x + 4 = 0$
$\Rightarrow 4x(x-2) - 2(x-2) = 0$
$\Rightarrow (4x-2)(x-2) = 0$

$\Rightarrow x = \dfrac{1}{2}$ or $x = 2$

But as $x = \dfrac{1}{2}$ will make OC negative
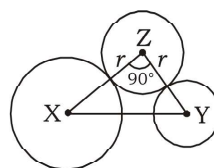
$\therefore x = 2$

68. (3)
A → 60 ——— 2
         ⎬ 120
B → 40 ——— 3

15 days work of a + b = 45
$\therefore$ Remaining work = 75

$\therefore$ Required time $= \dfrac{75}{2} = 37\dfrac{1}{2}$ days

69. (4)

$\angle XZY = 90°$
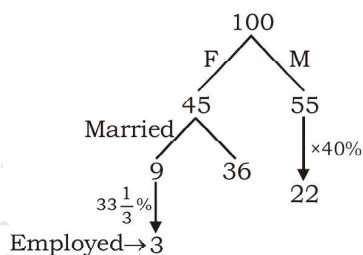$XY = (9 + r)$ cm,
$YZ = (r + 2)$ cm
$XY = 17$ cm
$\therefore XY^2 = XZ^2 + ZY^2$
$\Rightarrow 17^2 = (9 + r)^2 + (r + 2)^2$
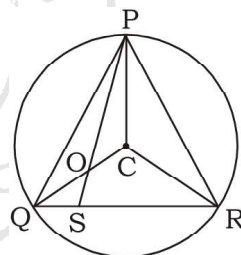$\Rightarrow (r - 6)(r + 17) = 0$
$\Rightarrow r = 6$ cm

70. (2) Let the total population be

$\therefore$ Total unemployed population = 75%

71. (2)

$\angle PQS = 60°$
$\angle QCR = 130°$

$\therefore \angle QPR = \dfrac{1}{2} \times 130° = 65°$

$\Rightarrow \angle QRP = 180° - 60° - 65° = 55°$
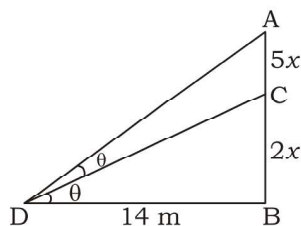In ΔRPS
$\angle PSR + \angle PRS + \angle RPS = 180°$
$90° + 55° + \angle RPS = 180°$
$\angle RPS = 35°$

72. (4) Let $BC = 2x$, then $CA = 5x$
$\therefore AB = 7x$
According to question

$\angle$ ADC = $\angle$ CDB = θ and BD = 14 m

In ΔBDC, tan θ = $\dfrac{BC}{BD} = \dfrac{2x}{14} = \dfrac{x}{7}$

In ΔABD, tan2θ = $\dfrac{AB}{BD} = \dfrac{7x}{14} = \dfrac{x}{2}$

$\Rightarrow \dfrac{2\tan\theta}{1-\tan^2\theta} = \dfrac{x}{2} \Rightarrow \dfrac{2\left(\dfrac{x}{7}\right)}{1-\left(\dfrac{x}{7}\right)^2} = \dfrac{x}{2}$

$\Rightarrow \dfrac{2x \times 7}{49-x^2} = \dfrac{x}{2} \Rightarrow 49 - x^2 = 28$

$\Rightarrow x^2 = 21 \Rightarrow x = \sqrt{21}$

$\therefore$ height of the pole = AB = 7x = $7\sqrt{21}$ m
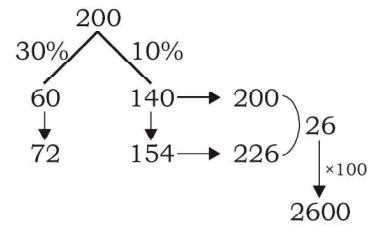
73. (1) x – y = k, x + y = 7k

$\therefore$ x = 4k, y = 3k

$\dfrac{xy}{4} = k \Rightarrow \dfrac{4k \cdot 3k}{4} = k \Rightarrow k = \dfrac{1}{3}$

xy = 4k = $4 \times \dfrac{1}{3} = \dfrac{4}{3}$

74. (1) Required C.P $= \dfrac{(30+10)}{10} \times 600 = $ ` 2400

75. (4) Total articles

Total cost of 200 articles = 200 × 100 = 20000

$\therefore$ C.P of 1 article $= \dfrac{20000}{200} = $ ` 100

76. (1) Sentence starting with 'No sooner', shall be in inverted form, i.e, 1 Did+ Sub+ V + ... thus, change it into 'No sooner did the teacher enter ....'.

77. (1) Replace 'such' by 'those'.

78. (3) 'Befell' is used only with the third person. If something befalls somebody, it means 'something unpleasant happen to somebody'.

79. (2) 'To lay the table' means 'to serve food'.

88. (2) 'Praise' is an uncountable noun.

89. (3) 'Love' doesn't take V1+ ing form as a verb. 'Loving' comes often as a noun.

91. (2) This sentence is in past tense. Thus, can shall be changed into 'could'.