

SSC CGL - 170839 GRAND TEST
HINTS AND SOLUTIONS

ANSWER KEY

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

- (3) $6 \Rightarrow \frac{6^2}{2} = \frac{36}{2} = 18$; $4 \Rightarrow \frac{4^2}{2} = \frac{16}{2} = 8$.
- (2) An oxygen is one of the constituent of water, similarly sodium is a constituent of salt.
- (4)

Word	T	O	M	A
Digit	1	2	3	4

\Rightarrow TOMATO = 123412
Also, MTOOTA = 312214
- (2)

11	38
↖ ↗	
x3 + 5	

13	44
↖ ↗	
x3 + 5	
- (4)

R	O	C	K
1	2	3	4
W	H	A	T
1	2	3	4

C	R	O	K
3	1	2	4
A	W	H	T
3	1	2	4

1

- (4)

B	H	E
↖ ↗		
+6 +3		

D	J	G
↖ ↗		
+6 +3		

S	Y	V
↖ ↗		
+6 +3		

P	U	S
↖ ↗		
+5 +2		
- (2) $263 \Rightarrow 2 \times 3 = 6$ $331 \Rightarrow 3 \times 1 = 3$
 $383 \Rightarrow 3 \times 3 \neq 8$ $551 \Rightarrow 5 \times 1 = 5$
- (3) All except Chanakya were the great mathematicians whereas Chanakya was an economist.
- (3) In all other pairs, second is the head of the first.
- (2) Let the present age of B = x yrs
then, present age of A = 3x yrs
4 yrs later, A's age = 31 yrs (given)
 $\Rightarrow 3x + 4 = 31$
 $\Rightarrow x = \frac{31-4}{3} = \frac{27}{3} = 9$ yrs.
So, B's present age = 9 yrs
then, A's present age = $9 \times 3 = 27$ yrs
4 year ago A's age = $27 - 4 = 23$ yrs
4 year ago C's age = $2 \times 23 = 46$ yrs
Present age of C = $46 + 4 = 50$ yrs
So, present age of B and C are 9 years and 50 years respectively.
- (3) The letters at the odd positions are moved two steps backward and the letters at even positions are moved two steps forward to get the result.
So, PAROLE will be NCPQJG.
- (3) The symbols adjacent to the face with symbol '*' are @, -, + and \$. Hence, the symbol opposite to '*' is 8.
- (1)
- (1)

Only conclusion (I) follows.

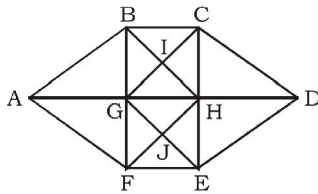
- (3)

Required distance

$$= \sqrt{60^2 + 80^2} = \sqrt{3600 + 6400} = \sqrt{10000} = 100 \text{ m.}$$

So, from starting point his father was 100 metre away.

16. (3) Pattern is +2, +2, +4, +4, ..., +16, +16
Missing number will be $18+8 = 26$
17. (2) Pattern in the series is, +20.5, +22.5.
Next term will be +24.5 and so on.
 $\Rightarrow 138 + 24.5 = 162.5$
18. (3) Animesh is 22 nd from left or twelfth from right (old position of Aman). So there are 21 boys to his left and 11 boys to his right. Thus including Animesh there are 33 boys in the row.
19. (2) Putting the position of the letters in reverse order
P = 11, S = 8, V = 5 and Y = 2.
20. (4) $1 + \left(\frac{1}{2}\right) = \frac{3}{2}, 2 + \left(\frac{2}{3}\right) = \frac{8}{3}, 3 + ? = \frac{19}{5}$
 $\Rightarrow ? = \left(\frac{19}{5}\right) - 3 = \left(\frac{4}{5}\right)$
21. (3) The figure may be labelled as shown.



Simple triangles are ABG, BIG, BIC, CIH, GIH, CDH, HED, GHJ, HJE, FEJ, GFJ and AGF i.e. 12 in number.

Triangles composed of two components are ABF, CDE, GBC, BCH, GHG, BHG, GHF, GHE, HEF and GEF i.e. 10 in number.

Triangles composed of three components are ABH, AFH, CDG and GDE i.e. 4 in number.

Triangles composed of four components are BHF and CGE i.e. 2 in number.

Total number of triangles in the figure = $12 + 10 + 4 + 2 = 28$.

22. (1)
23. (3)

24. (3)

Front Face	-	'	\$
Opposite Face	?	,	+

Only cube (4) can be formed.

25. (1)

51. (4) Let the average price of 1 book = ` x
According to the question,

$$\frac{50x + 76}{(50 + 14)} = x - 1 \Rightarrow \frac{50x + 76}{64} = x - 1$$

$$\Rightarrow 50x + 76 = 64x - 64 \Rightarrow 140 = 14x \Rightarrow x = \text{Rs.}10$$

Therefore average price of per book = Rs. 10

52. (1) $W = 2M, B = \frac{1}{2}M$

Given: $3M + 4W + 6B = 7$

$1.5W + 4W + 1.5W = 7$

(As, $3M = 1.5W, 6B = 3M = 1.5W$)

$\Rightarrow 7W = 7$

So, 7 women together can complete the work in 7 days.

53. (3) $55\frac{5}{9}\% = \frac{5}{9}$

So, $\begin{matrix} \text{D.S} & \text{U.S} \\ \text{Time} \rightarrow & 9 & (9 + 5) \\ & 9 & : & 14 \end{matrix}$

$\text{Speed} \rightarrow 14 : 9$

$5 \text{ km/h} \xrightarrow{\times 2} 10 \text{ km/h}$

\therefore downstream speed = $14 \times 2 = 28 \text{ km/h}$

\therefore upstream speed = $9 \times 2 = 18 \text{ km/h}$

\therefore Speed of boat in still water = $\frac{1}{2}(28 + 18) = 23 \text{ km/h}$

54. (2) Let the principal be ` x and time be y years

Now, we have

$\frac{x \times 10 \times y}{100} = 35 - x \Rightarrow y = \frac{35 - x}{x} \times 10 \dots(i)$

$\frac{x \times 8 \times y}{100} = 30 - x \Rightarrow y = \frac{30 - x}{x} \times 12.5 \dots(ii)$

Equating the equation (i) and (ii),

$\frac{10}{x}(35 - x) = \frac{12.5}{x}(30 - x)$

$\Rightarrow 350 - 10x = 375 - 12.5x$

$\Rightarrow 2.5x = 25 \Rightarrow x = \text{Rs.} 10$

Putting the value of equation (i)

$y = \frac{35 - 10}{10} \times 10 = 25 \text{ yrs.}$

So, time is 25 yrs.

55. (3) Raddii are in the ratio 2 : 3 : 1

\therefore Let the their radii are 2x, 3x and x respectively and $h_1 = h_2 \text{ \& } h_2 = x$

\therefore volume of cone = $\frac{1}{3}\pi r^2 h = \frac{1}{3}\pi(2x)^2 x = \frac{4}{3}\pi x^3$

Volume of cylinder = $\pi r^2 h = \pi(3x)^2 x = 9\pi x^3$

Volume of hemisphere = $\frac{2}{3}\pi x^3$

\therefore Ratio = $\frac{4}{3}\pi x^3 : 9\pi x^3 : \frac{2}{3}\pi x^3 = 4 : 27 : 2$

56. (3) $A + B = 90^\circ \Rightarrow A = 90^\circ - B$

$\Rightarrow \sin A = \sin(90^\circ - B) = \cos B$

Similarly, $\cos A = \sin B, \tan A = \cot B$

$\therefore \sin A \times \cos B + \cos A \times \sin B - \tan A \times \tan B + \sec^2 A - \cot^2 B = \cos^2 B + \sin^2 B - \cot B \times \tan B + \sec^2 A - \tan^2 A = 1 - 1 + 1 = 1$

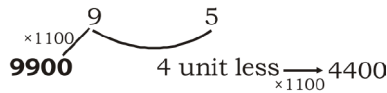


57. (3) Rate of interest = $11\frac{1}{9}\%$ or $\frac{1}{9}$

Let us consider $\frac{1}{9} = \frac{\text{interest}}{\text{principal}}$

S.I in 5 year = $5 \times 1 = 5$

So, Principal S.I



58. (3) $m^4 + \frac{1}{m^4} = 119$

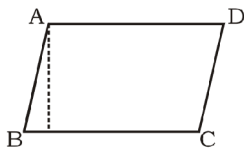
$\Rightarrow m^4 + \frac{1}{m^4} + 2 = 119 + 2 = 121 = 11^2$

$\Rightarrow \left(m^2 + \frac{1}{m^2}\right)^2 = 11^2 \Rightarrow m^2 + \frac{1}{m^2} = 11$

$\Rightarrow m^2 + \frac{1}{m^2} - 2 = 11 - 2 = 9 = 3^2$

$\Rightarrow \left(m - \frac{1}{m}\right)^2 = 3^2 \Rightarrow m - \frac{1}{m} = \pm 3$

59. (2) Sides are in ratio 5 : 4



Let the sides are $5x$ and $4x$ units

\therefore Parallelogram's area = greater side \times altitude

$\Rightarrow 1000 = 5x \times 20 \Rightarrow x = 10$

Similarly parallelogram's area

= smaller side \times its altitude

$\Rightarrow 1000 = 4x \times \text{its altitude}$

$\Rightarrow 1000 = 4 \times 10 \times \text{it's altitude}$

\therefore Altitude = 25 units

60. (3) $\frac{\cos^2 \theta}{\cot^2 \theta - \cos^2 \theta} = 3 \Rightarrow \frac{\cos^2 \theta}{\frac{\cos^2 \theta}{\sin^2 \theta} - \cos^2 \theta} = 3$

$\Rightarrow \frac{\cos^2 \theta}{\cos^2 \theta \left(\frac{1}{\sin^2 \theta} - 1\right)} = 3 \Rightarrow \frac{\sin^2 \theta}{1 - \sin^2 \theta} = 3$

$\Rightarrow \frac{\sin^2 \theta}{\cos^2 \theta} = 3 \Rightarrow \tan^2 \theta = 3$

$\Rightarrow \tan \theta = \sqrt{3} \Rightarrow \theta = 60^\circ$

61. (3) Male = $\frac{5}{9}$ part of total population

Married male = $60\% = \frac{3}{5}$

So, total % of married male = $\frac{5}{9} \times \frac{3}{5} \times 100 = 33\frac{1}{3}\%$

It means they will be married to $33\frac{1}{3}\%$ of women.

So, total population of married population is $66\frac{2}{3}\%$.

62. (4) Let x litres from each vessel are mixed

\therefore Total water in third vessel = $\frac{3x}{7} + \frac{5x}{8} = \frac{59x}{56}$

Total milk in third vessel = $\frac{4x}{7} + \frac{3x}{8} = \frac{53x}{56}$

\therefore Required ratio = $\frac{59x}{56} : \frac{53x}{56} = 59 : 53$.

63. (4) $\triangle ABC \sim \triangle PQR$

$\Rightarrow \frac{\text{Perimeter of } \triangle ABC}{\text{Perimeter of } \triangle PQR} = \frac{AB}{PQ} = \frac{BC}{QR} = \frac{CA}{RP}$

$\Rightarrow \frac{6+8+12}{\text{Perimeter of } \triangle PQR} = \frac{AB}{PQ} = \frac{6}{9} = \frac{2}{3}$

$\Rightarrow \frac{26}{\text{Perimeter of } \triangle PQR} = \frac{2}{3}$

\therefore Perimeter of $\triangle PQR = \frac{26 \times 3}{2} = 39$ cm.

64. (2) If $\sin A = \cos B$ then, $A + B = 90^\circ$

Hence, $x + y + 3(x + y) = 90^\circ$

$\Rightarrow 4x + 4y = 90^\circ \Rightarrow 2x + 2y = 45^\circ$

$\Rightarrow \tan(2x + 2y) = \tan 45^\circ = 1$

65. (2) Let the first part of journey is x km and the second part of journey is $(285 - x)$ km.

$\therefore \frac{x}{40} + \frac{285 - x}{55} = 6 \Rightarrow \frac{11x + 2280 - 8x}{440} = 6$

$\Rightarrow \frac{3x + 2280}{440} = \frac{6}{1} \Rightarrow 3x + 2280 = 2640$

$\Rightarrow 3x = 2640 - 2280 \Rightarrow x = \frac{360}{3} = 120$ km

\therefore The distance travelled by train

= $285 - x = 285 - 120 = 165$ km

66. (1) Let the original number is x

\therefore Answer obtained by student = $x \times 7.2 = 7.2x$

but correct answer = $0.72x$

$\Rightarrow 7.2x - 0.72x = 2592 \Rightarrow 6.48x = 2592$

$\Rightarrow x = \frac{2592}{6.48} = 400$

\therefore The original number is 400.

67. (3) Profit percent

= $25 - 10 + \frac{25 \times -10}{100} = 25 - 10 - 2.5 = 12.5\%$

68. (1) Let the income be 100.

$$\text{Total expenditure} = 30 + (100 - 30) \times \frac{50}{100} = 65$$

$$\therefore \text{Saving} = 100 - 65 = 35$$

$$\text{Now, } 35 \rightarrow \text{Rs. } (1000 + 1800)$$

$$\therefore 100 \rightarrow \frac{2800}{35} \times 100 = \text{Rs. } 8000$$

69. (1) After cutting 4 squares, the remaining sheet folded up to form an open rectangular box.

$$\therefore \text{Length of box} = 40 - (4 + 4) = 40 - 8 = 32 \text{ cm}$$

$$\text{Breadth of box} = 15 - (4 + 4) = 15 - 8 = 7 \text{ cm}$$

$$\text{and depth of box} = 4 \text{ cm}$$

$$\therefore \text{volume of the box} = 32 \times 7 \times 4 = 896 \text{ cm}^3$$

70. (2) $10 \sin^4 \alpha + 15 \cos^4 \alpha = 6 = 6(\sin^2 \alpha + \cos^2 \alpha)^2$

[Dividing both sides by $\cos^4 \alpha$]

$$\Rightarrow 10 \tan^4 \alpha + 15 = 6(\tan^2 \alpha + 1)^2$$

$$\Rightarrow 10 \tan^4 \alpha + 15 = 6 \tan^4 \alpha + 6 + 12 \tan^2 \alpha$$

$$\Rightarrow 4 \tan^4 \alpha + 9 - 12 \tan^2 \alpha = 0$$

$$\Rightarrow (2 \tan^2 \alpha - 3)^2 = 0$$

$$\Rightarrow 2 \tan^2 \alpha - 3 = 0$$

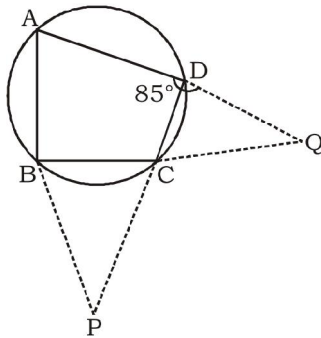
$$\Rightarrow \tan^2 \alpha = \frac{3}{2}$$

$$\therefore 27 \operatorname{cosec}^6 \alpha + 8 \sec^6 \alpha = 27(1 + \cot^2 \alpha)^3 + 8(1 + \tan^2 \alpha)^3$$

$$= 27 \left(1 + \frac{2}{3}\right)^3 + 8 \left(1 + \frac{3}{2}\right)^3$$

$$= 27 \times \frac{125}{27} + 8 \times \frac{125}{8} = 250.$$

71. (3) ABCD is cyclic Quadrilateral produced AB and DC meet at point P produced BC and AD meet at point Q



$$\angle ADC = 85^\circ$$

$$\therefore \angle CDQ = 180 - 85 = 95^\circ, \angle PBC = \angle ADC = 85^\circ$$

$$\therefore \angle BCP = 180^\circ - (\angle PBC + \angle CPB)$$

$$\Rightarrow \angle BCP = 180 - 125 = 55^\circ$$

$$\therefore \angle DCQ = \angle BCP = 55^\circ$$

$$\therefore \angle CDQ = \angle C + \angle D + \angle Q = 180$$

$$\Rightarrow 55^\circ + 95^\circ + \angle Q = 180^\circ$$

$$\Rightarrow \angle Q = 180^\circ - 150^\circ = 30^\circ$$

$$\Rightarrow \angle CQD = 30^\circ$$

72. (2) Least integer divisible by 21, 36, 66

$$= \text{L.C.M} = 2 \times 2 \times 3 \times 3 \times 7 \times 11$$

$$\therefore \text{Least perfect square number}$$

$$= 2 \times 2 \times 3 \times 3 \times 7 \times 7 \times 11 \times 11 = 213444$$

73. (4) There is maximum gap between 1998 and 2000 for state U. And maximum percentage increase is also for state U.

74. (2) Required less % = $\frac{105 - 70}{105} \times 100 = 33\frac{1}{3}\%$

75. (3) Avg. production

$$= \frac{80 + 60 + 25 + 50 + 50 + 80 + 80}{7} \approx 60.72 \text{ million tonnes}$$

76. (2) Replace 'are' by 'has', as the sentence takes present perfect form and 'cost' being a singular noun will take singular verb.

77. (1) Replace 'are' by 'is', as 'Neither of' takes a singular verb after it. Also change player into players.

78. (3) By 'impressionable age' we mean 'the young age when someone gets easily influenced or impressed by something'.

79. (1) A habit or usual action always takes simple present tense if the person is alive.

80. (1) 'unsavoury' means 'something not considered morally acceptable'.

88. (2) Verb 'avoids' takes 'V₁+ing' after it.

89. (3) 'precipitate' means 'cause a situation, which is bad or undesirable, to happen suddenly or unexpectedly'.