SSC CHSL GRAND TEST : 180112 - HINTS AND SOLUTIONS

ANSWER KEY

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

1. (2) 'Oval' is related to 'Circle' in the same way 'Rectangle' is related to Square.
2. (4) A bracelet is worn around the wrist, and a belt is worn around the waist.
3. (2) A vamp is part of a shoe, and a hood is part of a car.
4. (4) $\frac{18 \times 18}{2} = \frac{324}{2} = 162$; Similarly, $\frac{36 \times 36}{2} = \frac{1296}{2} = 648$
5. (3) Loss of memory is referred to as Amnesia.
   Similarly, loss of movement is referred to as Paralysis.
6. (2) Except Nagpur, all are north indian cities.
7. (4) The scientific study of the second is called the first in all the pairs except D.
8. (3) Kennel is a shelter for a pet dog, stable is a shelter for horses. Den is a living place of lion. But lock is used for safety of a door.
9. (4) 5 + 2 = 7, 6 + 3 = 9, 2 + 4 = 6; But 3 + 5 = 8 ? 6
10. (4) a b c / c b a / a b c / c b a
11. (4) 5 × 8 = 28 → 5 × 8 = 40 → 5 + 8 = 13,
    13 – 1 = 12 → 40 – 12 = 28
    3 × 7 = 12 → 3 × 7 = 21 → 3 + 7 = 10,
    10 – 1 = 9 → 21 – 9 = 12
    8 × 6 = 35 → 8 × 6 = 48 → 8 + 6 = 14,
    14 – 1 = 13 → 48 – 13 = 35
    13 × 13 = ? → 13 × 13 = 169 → 13 + 13 = 26,
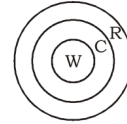   26 – 1 = 25 → 169 – 25 = 144

12. (1) $(7)^2 + (5)^2 + (3)^2 = 49 + 25 + 9 = 83$
    $(6)^2 + (4)^2 + (2)^2 = 36 + 16 + 4 = 56$
    $(8)^2 + (9)^2 + (1)^2 = 64 + 81 + 1 = 146$

13. (3) It is clear from the diagram that I am in south-east direction with respect to the original positon.
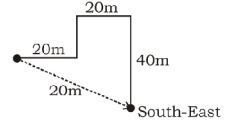
14. (2)   1. 3   2. 5

15. (4) Suppose present age of Mrs. Lata = x years
    Present age of son = y years;
    ∴ x + y = 64   ...(1)
    According to the question, x – 8 = 3 (y – 8)
    ∴ x – 8 = 3y – 24 ⟹ x – 3y = – 16   ...(2)
    From equations (1) and (2), y = 20;
    ∴ Age of Mrs. Lata = 64 – 20 = 44 years

16. (4) 12 × 2 + 3 = 27; 27 × 3 + 4 = 85;
    85 × 4 + 5 = 345; 345 × 5 + 6 = 1731

17. (3) $A \xrightarrow{+3} D \xrightarrow{+3} G \xrightarrow{+3} J$
    $Y \xrightarrow{-3} V \xrightarrow{-3} S \xrightarrow{-3} P$
    $K \xrightarrow{+3} N \xrightarrow{+3} Q \xrightarrow{+3} T$
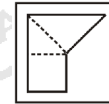   Similarly, $O \xrightarrow{-3} L \xrightarrow{-3} I \xrightarrow{-3} F$

18. (4) Comparing (i) and (iii) dice we have,

Top	3	**2**	1
Bottom	4	**5**	6

19. (2) Some teachers may be writers and vice-versa.

21. (1)

22. (3) Let x and y be the ten's and unit's digits respectively of the numeral denoting the woman's age.
    Then, woman's age = (10x + y) years;
    husband's age = (10y + x) years.
    Therefore (10y + x) – (10x + y) = (1/11) (10y + x + 10x + y)
    ⟹ (9y – 9x) = (1/11) (11y + 11x) = (x + y)
    ⟹ 10x = 8y ⟹ x /y = 4/5 ⟹ 10x + y = 10 × 4 + 5 = 45

51. (2) In 2013 collaboration with U.S.A $= \frac{64.8}{360} \times 1200 = 216$
    In 2014 collaboration with U.S.A $= \frac{75.6}{360} \times 1500 = 315$
    ∴ Required difference = 315 – 216 = 99

52. (3) In 2013 $= \frac{50.4}{3600} \times 1200 = 168$; In 2014 $= \frac{43.2}{3600} \times 1500 = 180$
    ∴ Required Ratio = 168 : 180 = 14 : 15

53. (2) In 2013 $= \frac{54}{360} \times 1200 = 180$; In 2014 $= \frac{46.8}{360} \times 1500 = 195$
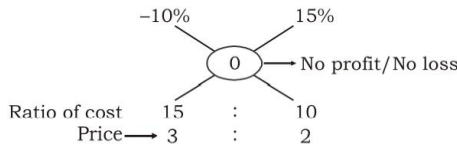   ∴ Required change $= \frac{15}{180} \times 100 = 8\frac{1}{3}\%$ increase

54. (4) $x = 3 + 2\sqrt{2}$ and $xy = 1$

$$\Rightarrow y = \frac{1}{x} = \frac{1}{3 + 2\sqrt{2}} = 3 - 2\sqrt{2}$$

$$\therefore x + y = 3 + 2\sqrt{2} + 3 - 2\sqrt{2} = 6$$

Again, $\dfrac{x^2 + 3xy + y^2}{x^2 - 3xy + y^2} = \dfrac{(x+y)^2 + xy}{(x+y)^2 - 5xy} = \dfrac{6^2 + 1}{6^2 - 5} = \dfrac{37}{31}$

55. (2) Loss % = –10%, Profit % = 15%
By alligation Rule,

According to the question,
Let CP_1 = 300 units, CP_2 = 200 units

$$SP_1 = \frac{300 \times 90}{100} = 270 \text{ units}; \quad SP_2 = \frac{200 \times 115}{100} = 230 \text{ units}$$

Total SP = 270 + 230 = 500 units
500 units = ` 30,000 $\Rightarrow$ 1 unit = ` 60
100 units = ` 60 × 100 = ` 6000
Difference in cost prices = ` 6000

56. (4) Let initial speed = 15 km/hr $\left[\because \frac{15 \times 1}{15} = 1\right]$

$\therefore$ Reduced speed = 15 – 1 = 14 km/hr
Time = 30 hours in both case.
$\therefore$ Distance (in case I) = 15 × 30 = 450 km
& Distance (in case II) = 14 × 30 = 420 km
$\therefore$ Difference = 450 – 420 = 30 km
But, the given difference = 10 km
$\therefore$ 30 → 10

$$\Rightarrow 1 \to \frac{10}{30} = \frac{1}{3} \qquad\qquad \Rightarrow 15 \to \frac{1}{3} \times 15 = 5$$

i.e., initial speed = 5 km/hr

57. (2) Number of passengers after getting down and getting in at the first station = 240 – 12 + 22 = 250
Passengers left in the train after the second station

$$= 250 - \frac{1}{5} \times 250 = 200$$

Let x people get down at the third station then
According to the question,

$$200 + 32 - x = 240 \times \frac{80}{100} \Rightarrow 232 - x = 192 \Rightarrow x = 40$$

58. (3) Cost price of an article A = ` 160

Selling price of A $= 160 \times \dfrac{120}{100} = $ ` 192

According to the question, Cost price of B = ` 192
Selling price of B = ` 240, Profit = 240 – 192 = ` 48

% Profit $= \dfrac{48}{192} \times 100 = 25\%$

59. (3) $\overline{\text{Bullets}}$ $\overline{\text{Train}}$
Distance covered in 45 seconds = 330 × 45 m

Required speed $= \dfrac{330 \times 45}{11 \times 60} \times \dfrac{18}{5}$ km/hr = 81 km/hr

60. (4) $\dfrac{4}{3}\pi(r_1^3 + r_2^3 + r_3^3) = \dfrac{4}{3}\pi(6)^3$

$$\Rightarrow 27 + 64 + r_3^3 = 216 \Rightarrow r_3^3 = 125 \Rightarrow r_3 = 5 \text{ cm}$$

61. (3)

	Tiger	:	Deer
leaps taken per minute	5	:	4
Distance covered per leap	8 m	:	5 m
Speed →	40 m/min :		20 m/min

20 m/min

Both are running in the same direction, so relative speed = (40 – 20) = 20 m/min.
Actual distance between deer and tiger = 50 × 8 = 400 m

Time taken by tiger to overtake deer $= \dfrac{400}{20} = 20$ min

Distance travelled by tiger in 20 min = 20 × 40 = 800 m

62. (4) The total cost of truck for a year

$$= 250000 + \frac{250000 \times 2}{100} + 2000 = \text{`} 257000$$

To get a return of 15% he must earn annualy

$$= \frac{257000 \times 15}{100} = \text{`} 38550$$

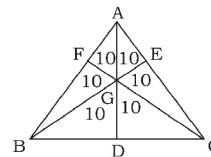Hence, monthly rent $= \dfrac{38550}{12} = $ ` 3212.50

63. (3) Let no. of new pages be P_2 then,

$$30 \times 25 \times 35 = P_2 \times 30 \times 28 \Rightarrow P_2 = \frac{125}{4} = 31.25$$

$\Rightarrow P_2 = 32$ pages (pages will always be integers)

So, Required percentage $= \dfrac{2}{30} \times 100 = 6.66\%$

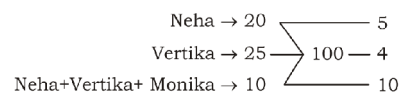**64. (3)**

Total area of ∆ABC = 60 cm 2
Hence the area of quadrilateral BDGF will be = 20 cm^2

65. (4) C.P. of 100 oranges = ` 350; S.P. of 12 oranges = ` 48

$\therefore$ S.P. of 100 oranges $= \dfrac{48}{12} \times 100 = $ ` 400

$\therefore$ profit % $= \dfrac{400 - 350}{350} \times 100 = \dfrac{100}{7} = 14\dfrac{2}{7}\%$

66. (3)

Hence share of monika $= \dfrac{1}{10} \times 700 = $ ` 70

67. (2) $10\sin^4 A + 15\cos^4 A = 6$

$\Rightarrow 10\sin^4 A + 15(1-\sin^2 A)^2 = 6$

$\Rightarrow 10\sin^4 A + 15 + 15\sin^4 A - 30\sin^2 A = 6$

$\Rightarrow 25\sin^4 A - 30\sin^2 A + 9 = 0$

$\Rightarrow 25\sin^4 A - 15\sin^2 A - 15\sin^2 A + 9 = 0$

$\Rightarrow 5\sin^2 A(5\sin^2 A - 3) - 3(5\sin^2 A - 3) = 0$

$\Rightarrow 5\sin^2 A - 3 = 0$

$\Rightarrow \sin^2 A = \dfrac{3}{5} \qquad\qquad \therefore \cos^2 A = \dfrac{2}{5}$

$\therefore 27\operatorname{cosec}^6 A + 8\sec^6 A$

$= 27 \times \left(\dfrac{5}{3}\right)^3 + 8 \times \left(\dfrac{5}{2}\right)^3 = 27 \times \dfrac{125}{27} + 8 \times \dfrac{125}{8} = 125 + 125 = 250.$

68. (3) L.C.M. of 21, 24, 28 = 168

$\therefore$ Required numbers = 168 × 15 = 2520

168 × 16 = 2688, 168 × 17 = 2856

69. (2) $\sin\theta + \operatorname{cosec}\theta = 4 \Rightarrow \sin\theta + \dfrac{1}{\sin\theta} = 4$

let $\sin\theta = x$;

$x + \dfrac{1}{x} = 4$

$\therefore \sin\theta - \operatorname{cosec}\theta = \left(x - \dfrac{1}{x}\right) - 2 \times \dfrac{1}{x} \times x$

$= x^2 + \dfrac{1}{x^2} - 2 = \left(x + \dfrac{1}{x}\right)^2 - 2 - 2 = (4)^2 - 4 = 16 - 4 = 12$

$\therefore \sin\theta - \operatorname{cosec}\theta = \sqrt{12} = 2\sqrt{3}$
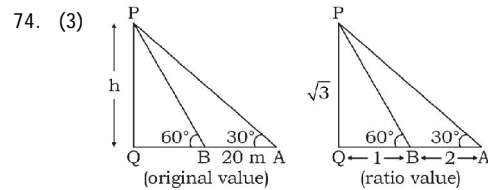
70. (4) $3 + \dfrac{1}{\sqrt{3}} + \dfrac{1}{(3+\sqrt{3})} \times \dfrac{(3-\sqrt{3})}{(3-\sqrt{3})} - \dfrac{1}{3-\sqrt{3}} \times \dfrac{(3+\sqrt{3})}{(3+\sqrt{3})}$

$= 3 + \dfrac{1}{\sqrt{3}} + \dfrac{1}{6}(3-\sqrt{3}) - \dfrac{1}{6}(3+\sqrt{3})$

$= 3 + \dfrac{1}{\sqrt{3}} + \dfrac{1}{2} - \dfrac{\sqrt{3}}{6} - \dfrac{1}{2} - \dfrac{\sqrt{3}}{6}$

$= 3 + \dfrac{1}{\sqrt{3}} - \dfrac{2\sqrt{3}}{6} = 3 + \dfrac{1}{\sqrt{3}} - \dfrac{\sqrt{3}}{3} = 3 + \dfrac{1}{\sqrt{3}} - \dfrac{1}{\sqrt{3}} = 3$

71. (1) OM = 4 cm = radius of smaller circle and

O'M = 6 cm = radius of bigger circle

$\therefore$ O'N = 8 – 6 = 2 cm

In $\triangle$O'NB,

$(O'B)^2 = (O'N)^2 + (BN)^2$

$\Rightarrow (BN)^2 = 36 - 4 = 32$

$\Rightarrow BN = 4\sqrt{2}$

$\therefore NC = BN = 4\sqrt{2}$

$\therefore BC = 4\sqrt{2} + 4\sqrt{2} = 8\sqrt{2}$ cm
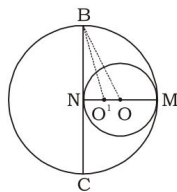
72. (4) $\sin 720° - \cot 270° - \sin 150° . \cos 120°$

$= \sin(2 \times 360° + 0°) - \cot(360° - 90°)$

$\qquad\qquad\qquad - \sin(90° + 60°) . \cos(90° + 30°)$

$= \sin 0° - \cot 90° + \cos 60° . \sin 30°$

$= 0 - 0 + \left(\dfrac{1}{2} \times \dfrac{1}{2}\right) = \dfrac{1}{4}$

73. (2) Since 1 < x < 2, we have x – 1 > 0 and x – 3 < 0 or 3 – x > 0

$\therefore \sqrt{(x-1)^2} + \sqrt{(x-3)^2} \qquad = \sqrt{(x-1)^2} + \sqrt{(3-x)^2}$

$= x - 1 + 3 - x = 2$

74. (3)

PQ = Tower = h metre (let)

Ratio value		Original value
AB → 2	⟶	20
$\therefore$ 1	⟶	10
$\therefore \sqrt{3}$	⟶	$10\sqrt{3}$

i.e. height of the tower = h (ratio value = $\sqrt{3}$)

$= 10\sqrt{3}$ metre.

75. (1) $(3a + 1)^2 + (b - 1)^2 + (2c - 3)^2 = 0$

On comparison, we get

$(3a + 1) = 0 \Rightarrow 3a = -1$

$(b - 1) = 0 \Rightarrow b = 1$

$(2c - 3)2 = 0 \Rightarrow 2c = 3$

Now, $(3a + b + 2c) = -1 + 1 + 3 = 3$

76. (2) Replace 'for' by 'on'.

77. (3) Conjunction 'not only' is followed by 'but also'. Thus, remove 'as well' as it makes it superfluous.

78. (2) 'Many a' is singular in nature. Hence, it takes singular verb, and singular noun after it. Thus, replace 'are' by 'is'.

79. (1) Since we are talking about the disparity present in two different section of the society, it will take 'between'.

84. (4) 'pass off' means '(of an event) to take place and be completed in a particular way'.

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