

**SSC CHT1 - 180113 GRAND TEST**  
**HINTS AND SOLUTIONS**

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

1. (3) As,  $Z \xrightarrow{-8} R \xrightarrow{+7} Y \xrightarrow{-8} Q$

$K \xrightarrow{-8} C \xrightarrow{+7} J \xrightarrow{-8} B$

Similarly,  $P \xrightarrow{+7} W \xrightarrow{-8} O \xrightarrow{+7} V$

$E \xrightarrow{+7} L \xrightarrow{-8} D \xrightarrow{+7} K$

2. (3) As,  $68 = (4)^3 + 4$

$130 = (5)^3 + 5$

and  $350 = (7)^3 + 7$

Therefore,  $? = (6)^3 + 6 = 222$

3. (2) Machine is made to work according to the instruction of human. Similarly, slave works under the instruction of his master.

4. (1) Pigeon is the symbol of 'peace' and White flag is the symbol of surrender.

5. (3) All except New York are capital cities.

6. (4)  $12306 \Rightarrow 1 \times 2 \times 3 = 06$

$23212 \Rightarrow 2 \times 3 \times 2 = 12$

$32424 \Rightarrow 3 \times 2 \times 4 = 24$

$41206 \Rightarrow 4 \times 1 \times 2 = 08 \neq 06$

1

7. (3)  $4489 = 67 \times 67$

$5329 = 73 \times 73$

$2401 = 49 \times 49$

$8381 = \text{not a perfect square}$

8. (1) Putting the value  $\blacklozenge = 3$ ,  $\times\times = 4$  and  $\blacklozenge = 5$  satisfies all three data.

As,  $\blacklozenge = 5 \Rightarrow \blacklozenge = 2.5$

So,  $\blacklozenge + \blacklozenge + \times\times + \times\times$

$= 3.5 \blacklozenge + 2 \blacklozenge + 2 \times\times$

$= 3.5 \times 5 + 2 \times 3 + 2 \times 4 = 31. \quad 5$

9. (1) **Range**   **No. of occurrence**   **Page no.**

1 - 10                      1                      5

11 - 20                    1                      15

21 - 30                    1                      25

31 - 40                    1                      35

41 - 50                    2                      45, 50

51 - 60                    10                     51, 52, 53, 54, 55, 56, 57,

58, 59

61 - 70                    1                      65

71 - 80                    1                      75

81 - 90                    1                      85

91 - 100                   1                      95

**20**

10. (2) The correct order is :

Skull      Face      Neck      Shoulder      Hand

3            9            4            2            10

Chest      Stomach      Thigh      Knee      Heel

6            8            7            5            1

11. (3) Required no. of people =  $6 + 7 = 13$

12. (4) No one can speak all the languages.

13. (3)  $(9 \times 8) + (8 \times 6) + (6 \times 7) + (7 \times 9)$

$= 72 + 48 + 42 + 63 = 225$

$(6 \times 7) + (7 \times 4) + (4 \times 3) + (6 \times 3)$

$= 42 + 28 + 12 + 18 = 100$

$(9 \times 6) + (6 \times 4) + (4 \times 5) + (9 \times 5)$

$= 54 + 24 + 20 + 45 = 143$

14. (1)  $361324 \Rightarrow \sqrt{361} = 19$  and  $\sqrt{324} = 18$

$\Rightarrow 19^2 - 18^2 = (19 + 18) \times (19 - 18) = 37 \times 1 = 37$

$484169 \Rightarrow \sqrt{484} = 22$  and  $\sqrt{169} = 13$

$\Rightarrow 22^2 - 13^2 = (22 + 13) \times (22 - 13) = 35 \times 9 = 315$

$625196 \Rightarrow \sqrt{625} = 25$  and  $\sqrt{196} = 14$

$\Rightarrow 25^2 - 14^2 = (25 + 14) \times (25 - 14) = 39 \times 11 = 429$

15. (3) Here the common faces with 4 dots are in same positions. Hence 2 will be opposite to 5.

16. (2) Bindu - Seema - Rani - Reeta - Mary

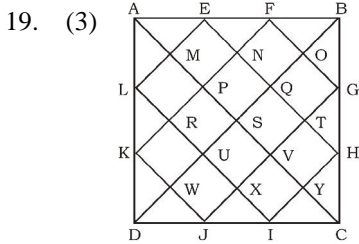
17. (2) Let Tanya paid ` x then, amount paid by Vivek `  $\frac{x}{2}$

Again, amount paid by Ashutosh =  $\frac{x}{2} \times \frac{2}{3} = \frac{x}{3}$

$$\text{Total bill} = x + \frac{x}{2} + \frac{x}{3} = \frac{6x + 3x + 2x}{6} = \frac{11x}{6}$$

$$\therefore \text{Required fraction} = \frac{\left(\frac{x}{2}\right)}{\frac{11x}{6}} = \frac{3}{11}$$

18. (4) The correct order is : D A B E C. D is third to the left of E' is correct.



Simple triangles are AML, LRK, KWD, DWJ, JXI, IYC, CYH, HTG, GOB, BOF, FNE and EMA i.e. 12 in number.

Triangles composed of two components each are AEL, KDJ, HIC and FBG i.e. 4 in number. Triangles composed of three components each are APF, EQB, BQH, GVC, CVJ, IUD, DUL and KPA i.e. 8 in number.

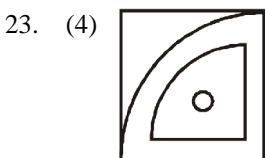
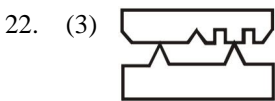
Triangles composed of six components each are ASB, BSC, CSD, DSA, AKF, EBH, GCJ and IDL i.e. 8 in number.

Triangles composed of twelve components each are ADB, ABC, BCD and CDA i.e. 4 in number.

Total number of triangles in the figure = 12 + 4 + 8 + 8 + 4 = 36

20. (2) 1, 7, 8; 3, 5, 6; 2, 4, 9

21. (3) T (2 lines) + V (2 lines) = H (4 lines)  
Z (3 lines) + Y (2 lines) = R (5 lines)  
| (1 line) + L (2 lines) = U (3 lines)



24. (1) As the colour of the milk is white and it is given that 'red means white'. So, the colour of milk is red.

25. (2)

51. (2) Area of circular field =  $\pi r^2 = 3850$  sq. m.

$$\Rightarrow \pi r^2 = 3850$$

$$\Rightarrow r^2 = \frac{3850}{22} \times 7 = 1225 \Rightarrow r = 35 \text{ m}$$

Now, circumference of circle =  $2\pi r$

$$= 2 \times \frac{22}{7} \times 35 = 44 \times 5 = 220 \text{ m}$$

Side of the square field =  $\frac{220}{4} = 55 \text{ m}$

Area of square =  $55 \times 55 \text{ m}^2 = 3025 \text{ m}^2$

52. (4) Pay/hour  $\times$  Number of hours = Wages  
Increase by 40%  $\leftarrow \frac{5}{7}$       6 Decrease = 30  
5  $\rightarrow$  by  $16\frac{2}{3}\%$  = 35

Wages increased by =  $\frac{5}{30} \times 100 = 16\frac{2}{3}\%$

53. (2) 119 + 19 = 138

$\therefore$  Required no. =  $\frac{138}{17}$

The remainder is 2.

54. (1) No. of other workers except centre heads = x

$$\therefore 12 \times 400 + x \times 56 = (x + 12) \times 60$$

$$\Rightarrow 4800 + 56x = 60x + 720$$

$$\Rightarrow 4x = 4080$$

$$x = 1020$$

$\therefore$  Total no. of employees = 1020 + 12 = 1032

55. (3) Let the distance of the place from the starting point be x km

$\therefore$  The speed of the man along the stream

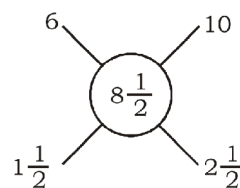
$$= 10 + 3 = 13 \text{ kms/hr}$$

Speed of man against the stream = 10 - 3 = 7 kms/hr

$$\therefore \frac{x}{13} + \frac{x}{7} = 1 \text{ or } 20x = 13 \times 7$$

$$\therefore x = \frac{91}{20} = 4.55 \text{ km}$$

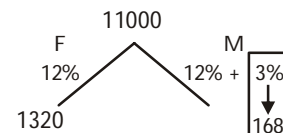
56. (4) From the rule of alligation



$\therefore$  Ratio between 1st and 2nd sum = 3 : 5

$$\therefore \text{2nd sum} = \frac{5}{3} \times 7500 = \text{Rs. } 12500$$

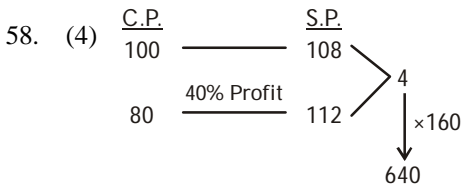
57. (1)



$$\therefore 3\% = 168$$

$\therefore$  No. of males = 5600 and no. of females = 5400

Required diff. = 200



$\therefore$  initial cost price =  $100 \times 160 = \text{Rs. } 16,000$

59. (3)  $a^3 + b^3 + c^3 - 3abc$   
 $= \frac{1}{2}(a+b+c)[(a-b)^2 + (b-c)^2 + (c-a)^2]$   
 $= \frac{1}{2}(333 + 333 + 334)[(0)^2 + (-1)^2 + (1)^2]$   
 $= \sqrt[3]{\frac{1}{2} \times 1000 \times 2} = 10$

60. (1) In  $\Delta ORS$ ,  $OR = OS = \text{Radii}$   
 $\therefore \angle ORS = y^\circ$   
 $\angle POR = y^\circ + y^\circ = 2y^\circ$  [external angle property]

In  $\Delta POR$ ,  
 $\angle OPR + \angle POR + \angle PRO = 180^\circ$   
 $\Rightarrow x^\circ + 2y^\circ + 90^\circ = 180^\circ$   
 $\Rightarrow x^\circ + 2y^\circ = 90^\circ$

61. (2)  $(x+1)$  and  $(x-2)$  are factors of  $x^3 + (a+1)x^2 - (b-2)x - 6$   
 At  $x = -1$ ,  
 $(-1)^3 + (a+1)(-1)^2 - (b-2)(-1) - 6 = 0$   
 $\Rightarrow -1 + a + 1 + b - 2 - 6 = 0$   
 $a + b = 8$  ... (i)  
 At  $x = 2$ ,  
 $2^3 + (a+1)2^2 - (b-2) \times 2 - 6 = 0$   
 $\Rightarrow 8 + 4a + 4 - 2b + 4 - 6 = 0$   
 $2a - b = -5$  ... (ii)  
 On adding (i) and (ii),  
 $3a = 3$   
 $a = 1$   
 $b = 7$

62. (1)  $\tan(x+y) \tan(x-y) = 1$   
 $\Rightarrow \tan(x+y) = \frac{1}{\tan(x-y)} = \cot(x-y)$   
 $\Rightarrow \tan(x+y) = \tan(90^\circ - (x-y))$   
 $= x+y = 90^\circ - (x-y)$   
 $\Rightarrow 2x = 90^\circ \Rightarrow \frac{2x}{3} = 30^\circ$   
 $\therefore \tan \frac{2x}{3} = \tan 30^\circ = \frac{1}{\sqrt{3}}$

63. (3)  $A : B = 1 : 2 = 3 : 6$   
 $B : C = 3 : 4 = 6 : 8$   
 $C : D = 6 : 9 = 2 : 3 = 8 : 12$   
 $D : E = 12 : 16$   
 $\therefore A : B : C : D : E = 3 : 6 : 8 : 12 : 16$

64. (3) Volume of right prism = Area of the base  $\times$  height  
 $\Rightarrow 10380 = 173 \times h$   
 $\Rightarrow h = \frac{10380}{173} = 60 \text{ cm}$

Now, Area of triangle =  $= \frac{\sqrt{3}}{4} \times (\text{Side})^2$

$\Rightarrow 173 = \frac{\sqrt{3}}{4} \times (\text{Side})^2$

$\therefore \text{Side} = \sqrt{\frac{173 \times 4}{\sqrt{3}}} = \sqrt{\frac{173 \times 4}{1.73}} = 20 \text{ cm}$

$\therefore$  Perimeter =  $3 \times 20 = 60 \text{ cm}$

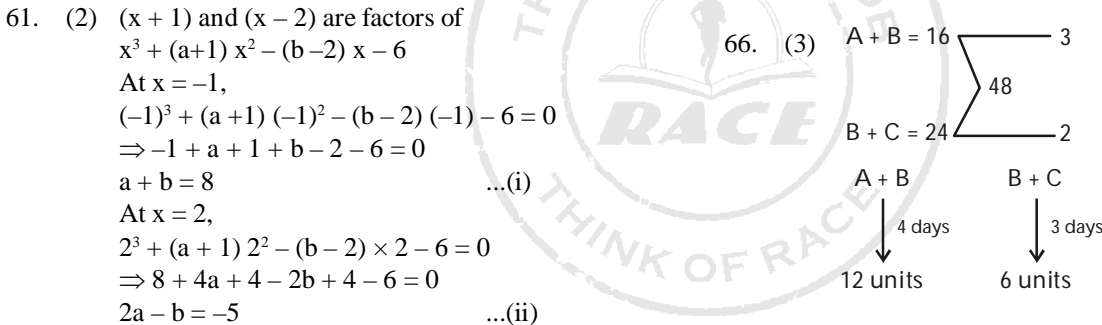
$\therefore$  Area of the lateral surface

= Perimeter base  $\times$  height =  $60 \times 60 = 3600 \text{ sq. cm}$

65. (2)  $\cos \theta = \frac{15}{17} = \frac{\text{Base}}{\text{hypotenuse}}$

$\therefore$  Perpendicular =  $\sqrt{(17)^2 - (15)^2}$   
 $= \sqrt{289 - 225} = \sqrt{64} = 8$

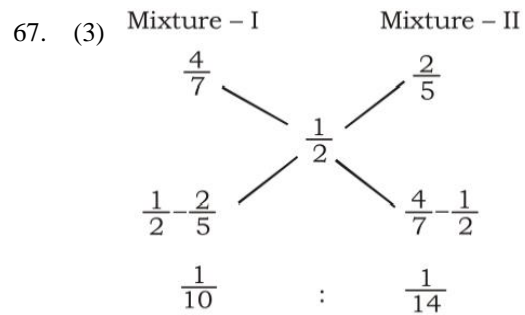
$\therefore \cot(90^\circ - \theta) = \tan \theta = \frac{\text{Perpendicular}}{\text{Base}} = \frac{8}{15}$



Total work left = 30 unit

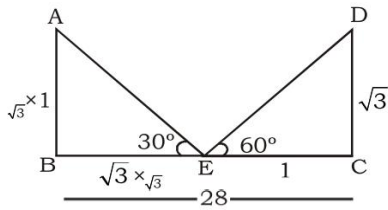
$\therefore$  Efficiency of C =  $\frac{30}{20}$

$\therefore$  Required days =  $\frac{2}{3} \times 48 = 32 \text{ days}$



$\therefore$  Required ratio = 7 : 5

68. (4)



∴ BC (ratio value) = 4

∴ 4 = 28

1 = 7

∴  $\sqrt{3} = 7\sqrt{3} \Rightarrow h = 7\sqrt{3}$

69. (2) Total age of all boys along with the teacher

=  $(24 + 1) \times 15 = 375$  years

Total age of all boys excluding The teacher

=  $24(15 - 1) = 336$  years

∴ The age of the teacher =  $375 - 336 = 39$  years

70. (1) Profit Ratio of A, B and C

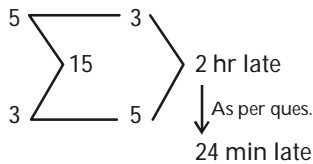
=  $(5 \times 12) : (7 \times 12) : \left(6 \times 6 + \frac{6}{2} \times 6\right)$

=  $60 : 84 : 54 = 10 : 14 : 9$

∴ Share of C in the Profit

=  $\frac{9}{33} \times 33000 = \text{Rs.}9000$

71. (3)



∴  $\frac{24}{120} = \frac{1}{5}$

∴ Required distance =  $15 \times \frac{1}{5} = 3$  km

72. (3) L.C.M of 30 min, 60 min, 90 min & 105 min = 1260 min

Total hours =  $\frac{1260}{60} = 21$  hours

∴ The bell will again ring simultaneously after 21 hours.

∴ Time will be = 9 a.m

73. (3) Percentage expenditure on clothes for family B = 15

∴ Required expenditure =  $\frac{10000 \times 15}{100} = \text{Rs.}1500$

74. (3) Expenditure on education for family A = 20%

Required fraction =  $\frac{20}{100} = \frac{1}{5}$

75. (1) Food + clothes + house rent =  $30 + 15 + 15 = 60\%$

∴ Required expenditure =  $\frac{30000 \times 60}{100} = \text{Rs.}18000$

76. (3) Since the subject (i.e, every voter) is singular, it will take singular possessive adjective. Replace 'their' by 'his/her'. Also change 'caste' into 'cast'.

77. (2) The part of the sentence which starts with 'unless' takes simple present tense. Change 'unless we will qualify' into 'unless we qualify'.

78. (2) As the subject of the sentence (i.e, many misfortune) is plural, it requires plural verb as well. Thus, replace 'comes' by 'come'.

81. (1) A past conditional sentence takes the following form: **Had+ sub+ V<sub>3</sub>, Sub+ would have+ V<sub>3</sub> + obj.**

90. (4) An action that will have been completed in future while referring to a particular time frame, comes under future perfect tense.

92. (2) Sentence starting with 'only' takes inversion form.