SSC CHSL GRAND TEST : 171208 - HINTS AND SOLUTIONS

ANSWER KEY

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

1. (3) As,

Similarly,

2. (4) As,

$8 \longrightarrow 48$ ($\times 6$)

Similarly,

$23 \longrightarrow \mathbf{138}$ ($\times 6$)
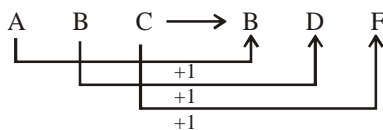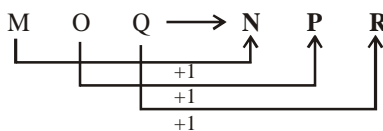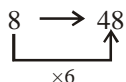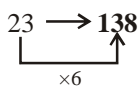
3. (1) As 3   1   20
    C   A   T $\Rightarrow 3120$

Similarly, 13   1   20
    M   A   T $\Rightarrow \mathbf{13120}$

4. (4) As, Jawaharlal Nehru was the 1st Prime Minister of Inida. Similarly, Dr. Rajendra Prasad was the 1st President of India.

5. (1) Except 2, 3 all other groups both digits are divisible, while in 2, 3 both digits are prime.

6. (4) Except Waterfall, all other belongs to the same group.

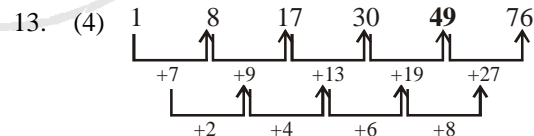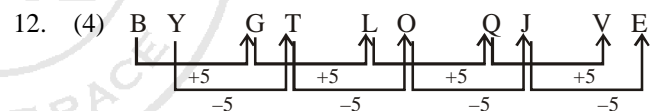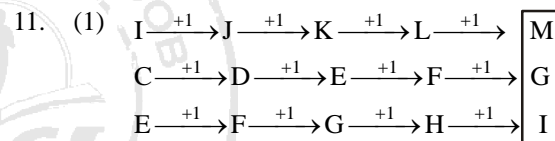7. (1) Except Flute, all other are string based instruments.

8. (1) Except Litre, all other are length units while litre is a liquid unit.

9. (3) Words in ascending order are follows,

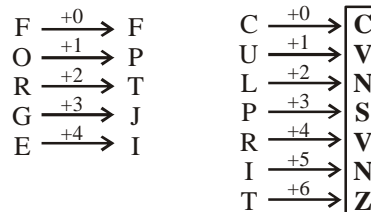Centimetre $\rightarrow$ Decimetre $\rightarrow$ Metre $\rightarrow$ Kilometre
   (1)   (3)   (4)   (2)

10. (1) From option (1),
a b̲ b / a b̲ b / a̲ b̲ b / a b̲ b $\Rightarrow$ bbabb

11. (1)

12. (4)

13. (4)

14. (3) As,   Similarly,

15. (4) Let the Hema's and Geeta's present age be x yr and y yr respectively.
Then, x + 10 = 40
$\Rightarrow$ x = 30 yr and (x – 10) = 2 (y – 10)
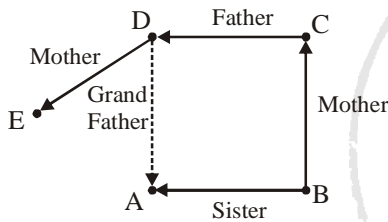$\Rightarrow$ 30 – 10 = 2y – 20 $\Rightarrow$ 20 = 2y – 20 $\Rightarrow$ y = 20 yr

16. (4) BLUE word can be formed from the given main word IMMEASURABLE.

17. (4) As, $10 - 3 \Rightarrow 7 + 5 = 12$; $12 - 4 \Rightarrow 8 + 5 = 13$
$14 - 5 \Rightarrow 9 + 5 = 14$
Similarly, $16 - 6 \Rightarrow 10 + 5 = \mathbf{15}$.

18. (3) As, $13 + 11 + 16 = 40$ and $24 + 6 + 10 = 40$
Similarly, $9 + ? + 20 = 40$ Þ $? = 40 - 29 = \mathbf{11}$.

19. (1) As, $2^4 = 16$; $4^4 = 256$ and $1^4 = 1$; $3^4 = 81$
Similarly, $4^4 = 256$, $5^4 = \mathbf{625}$.

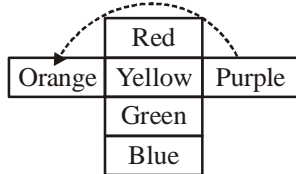20. (2) Seeta and Geeta walking directions are as follows :
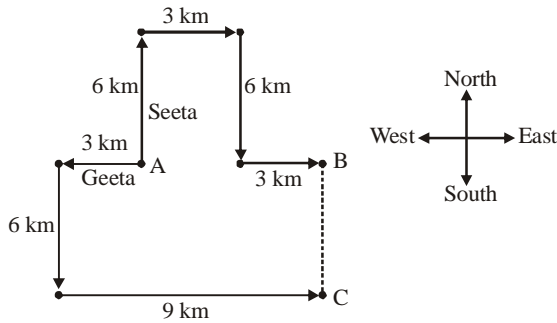
∴ Required distance (BC) = 6 km.

21. (2)

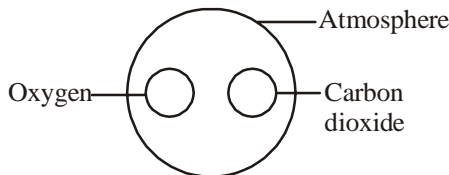Hence, A is granddaughter of D.

22. (4) Unfolded figure of dice is as follows,

Hence, orange is the opposite colour of purple.

23. (1) Answer figure (1) will complete the pattern of the question figure.

24. (4)

Oxygen and carbon dioxide both gases are found in atmosphere.

25. (4) B → $\boxed{12}$, 24, 31, 55

E → $\boxed{15}$, $\boxed{21}$, 34, 43, 52, 107, 1010

∴ BEE → 12, 21, 15

51. (4) SP = MP − 8% of MP

$= 250 - \dfrac{8}{100} \times 250 = 250 - 20 = \text{Rs.}230$

$\therefore \text{CP} = \dfrac{100 \times 230}{115} \quad \left[\because \text{CP} = \left(\dfrac{100}{100 + \text{Profit \%}} \right) \times \text{SP} \right]$

= Rs. 200

52. (3) Let the numbers be 2x and 3x.
Since 2x + 3x = 125

$\Rightarrow 5x = 125 \Rightarrow x = \dfrac{125}{5} = 25$

Hence, the numbers are 2×25 and 3×25 i.e. 50 and 75.

53. (1) Number of coins = 280
$8x + 2 \times 4x + 4 \times 3x = 280$
$\Rightarrow 8x + 8x + 12x = 280$
$\Rightarrow 28x = 280 \Rightarrow x = 10$
Number of 50 paise coins = $8 \times 10 = 80$

54. (1) Since $3^1 + 3^2 + 3^3 + ... + 3^n = \dfrac{3}{2}(3^n - 1)$

$\therefore 1 + \dfrac{3}{2}(3^n - 1) > 2000$

Put n = 7,

$1 + \dfrac{3}{2}(3^7 - 1) > 2000$

$\Rightarrow 1 + \dfrac{3}{2} \times 2186 > 2000$

$\Rightarrow 1 + 3279 > 2000$

$\Rightarrow 3280 > 2000$

55. (4) $(0.2)^3 \times 200 \div 2000 \text{ of } (0.2)^2$

$= \left(\dfrac{2}{10} \right)^3 \times 200 \div 2000 \times \left(\dfrac{2}{10} \right)^2$

$= \dfrac{8}{1000} \times 200 \div 2000 \times \dfrac{4}{100}$

$= \dfrac{1600}{1000} \div \dfrac{8000}{100} = \dfrac{1600}{1000} \times \dfrac{100}{8000} = \dfrac{16}{800} = \dfrac{1}{50}$

56. (4) Numbers in sequence, 19, 23, 29, 37, 43, 46, 47.
In the given sequence, there are all the prime numbers except 46.

57. (2)

2	20184
2	10092
2	5046
3	2523
29	841
29	29
	1

$\therefore 20184 = 2 \times 2 \times 2 \times 3 \times 29 \times 29$

Therefore, 20184 should be multiplied by 6.

(because 2 and 3 are not in pair).

So, as to obtain a perfect square.

58. (3) Pipe A fills a tank in 1 hr $= \dfrac{1}{2}$

Pipe B fills a tank in 1 hr $= \dfrac{1}{3}$

Both pipe can fill a tank in 1 h $= \dfrac{1}{2} + \dfrac{1}{3} = \dfrac{5}{6}$

So, both pipe can fill an empty tank

$= \dfrac{6}{5}$ h $= 1\dfrac{1}{5}$ hr $= 1$ hr 12 min

59. (4) Area of a trapezium

$= \dfrac{1}{2}(6+8) \times 4 = \dfrac{1}{2} \times 14 \times 4 = 28$ cm^2

60. (4) Diameter of a bicycle wheel = 56 cm

Radius $= \dfrac{56}{2} = 28$ cm

$\therefore$ Number of rotations

$= \dfrac{\text{Distance covered}}{\text{Circumference}}$

$= \dfrac{2.2 \times 1000 \times 100}{2 \times \dfrac{22}{7} \times 28} = \dfrac{220000 \times 7}{2 \times 22 \times 28} = 1250$

61. (4) If $x^2 + ax + b$ is a perfect square, then relation between a and b, $a^2 = 4b$.

62. (2) Average $= \dfrac{2 \times 8 + 3 \times 3}{5} = \dfrac{16+9}{5} = \dfrac{25}{5} = 5$

63. (2) C.P. = Rs. 15

Loss % = 10%

Loss $= 15 \times \dfrac{10}{100} = $ Rs.1.5

S.P. = C.P. – Loss = 15 – 1.5 = Rs. 13.50.

64. (3) 8% of x = 4% of y $\Rightarrow$ 2% of x = 1% of y

$\therefore$ 20% of x $= \dfrac{20}{2}$ % of y = 10% of y

65. (4) For the first year, CI = SI

For the second year, CI includes interest on the principal as well as on the interest earned during the first year. SI is the interest only on the principal.

Therefore, the difference, between CI and SI for 2 yr period is interest for the second year on the first year's interest
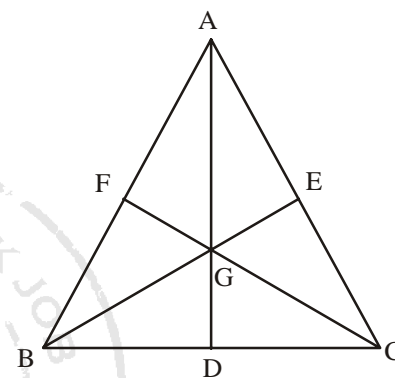
CI – SI = 615 – 600 = Rs. 15

First year's SI $= \dfrac{600}{2} = $ Rs. 300

So, Rs. 15 is the interest on Rs. 300 for 1 yr.

$\therefore$ r $= \dfrac{100 \times 15}{300 \times 1} = 5\%$

Now, P $= \dfrac{100 \times 600}{5 \times 2} = $ Rs.6000

66. (4)

Area of quadrilateral BDGF

$= \dfrac{1}{3}$ (Area of $\triangle$ABC) $= \dfrac{1}{3} \times 36 = 12$ cm^2

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

$= \dfrac{\sin\theta}{\cos\theta} \cdot \dfrac{\cos 2\theta}{\cos 2\theta} = \tan\theta$

68. (2) Here, $r\sin\theta = \dfrac{7}{2}$

$r^2\sin^2\theta = \dfrac{49}{4}$ ...(i)

and $r\cos\theta = \dfrac{7\sqrt{3}}{2}$

$r^2\cos^2\theta = \dfrac{147}{4}$ ...(ii)

On adding Eqs. (i) and (ii), we get

$r^2 = \dfrac{49}{4} + \dfrac{147}{4} \Rightarrow r^2 = \dfrac{196}{4} = 49$

$\therefore$ r = 7

69. (3) $\dfrac{1}{(1-a)(1-b)(1-c)} + \dfrac{1}{(1-b)(1-c)(1-d)}$

$\quad + \dfrac{1}{(1-c)(1-d)(1-a)} + \dfrac{1}{(1-d)(1-a)(1-b)}$

$= \dfrac{1-d+1-a+1-b+1-c}{(1-a)(1-b)(1-c)(1-d)}$

$= \dfrac{4-(a+b+c+d)}{(1-a)(1-b)(1-c)(1-d)} \qquad [\because a+b+c+d=4]$

$= \dfrac{4-4}{(1-a)(1-b)(1-c)(1-d)}$

$= \dfrac{0}{(1-a)(1-b)(1-c)(1-d)} = 0$

70. (4) $a^{\frac{1}{3}} + b^{\frac{1}{3}} + c^{\frac{1}{3}} = 0$

$\Rightarrow a^{\frac{1}{3}} + b^{\frac{1}{3}} = -c^{\frac{1}{3}}$

On cubing both sides,

$(a^{\frac{1}{3}} + b^{\frac{1}{3}})^3 = (-c^{\frac{1}{3}})^3$

$\Rightarrow a + b + 3a^{\frac{1}{3}}b^{\frac{1}{3}}(a^{\frac{1}{3}} + b^{\frac{1}{3}}) = -c$
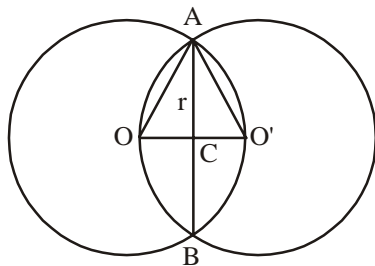
$\Rightarrow a + b + c = 3a^{\frac{1}{3}}b^{\frac{1}{3}}c^{\frac{1}{3}}$ (From Eq. (i))

Again on cubing both sides,

$(a + b + c)^3 = 27abc$

71. (4) $OO' = OA = r$

$OC = O'C = \dfrac{r}{2}$

Now, in $\triangle OCA$

$OA^2 = OC^2 + AC^2$

$\Rightarrow AC^2 = OA^2 - OC^2$

$\Rightarrow AC^2 = r^2 - \left(\dfrac{r}{2}\right)^2$

$\Rightarrow AC^2 = r^2 - \dfrac{r^2}{4} = \dfrac{3r^2}{4}$

$\therefore AC = \dfrac{\sqrt{3}r}{2}$

Length of the common chord,

$AB = 2 \times AC = 2\dfrac{\sqrt{3}}{2}r = \sqrt{3}r$ units

72. (1) The required pass percentage in year 2008

$= \left(\dfrac{50+70+60}{240} \times 100\right) = \left(\dfrac{180}{240} \times 100\right) = 75\%$

73. (3) The required number of third division in year 2006 = 60

74. (2) Percentage of pass students in year 2006

$= \dfrac{140 \times 100}{170} = 82.35\%$

Percentage of pass students in year 2007

$= \dfrac{150 \times 100}{190} = 78.79\%$

and percentage of pass students in year 2008

$= \dfrac{180}{240} \times 100 = 75\%$

Clearly, the college had the best result in year 2006.

75. (3) The required per cent of students pass in first division in year 2007

$= \dfrac{30}{190} \times 100 = 15\dfrac{15}{19}\%$

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