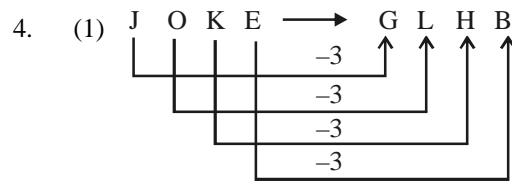




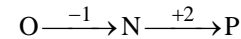
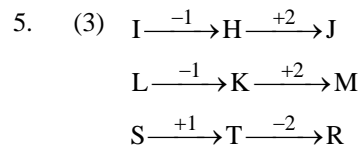
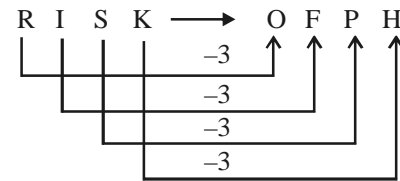
**SSC CHSL - CHT1 : 180235 GRAND TEST**  
**HINTS AND SOLUTIONS**

**ANSWER KEY**

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

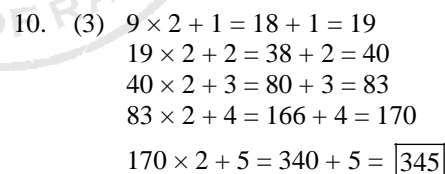
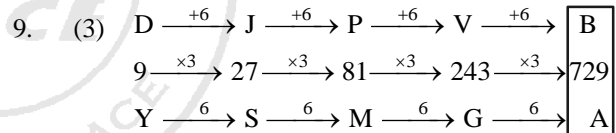
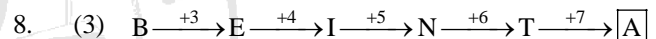


Similarly,

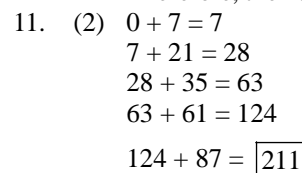


6. (2) Except remedy, all other terms denote loss of something.

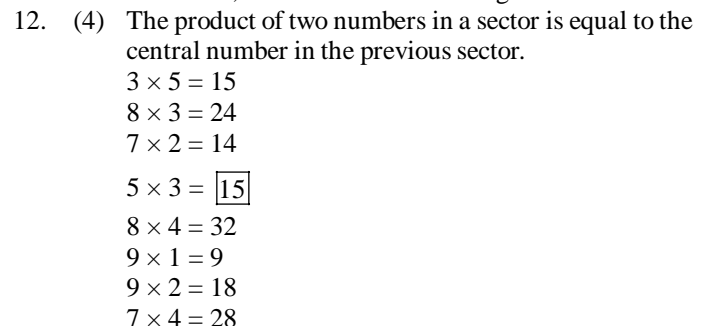
7. (1) Socrates was a Greek philosopher. Ludwig Van Beethoven was German Composer and Musician. Bach was also a German Composer. W.A. Mozart was a Austrian Composer.



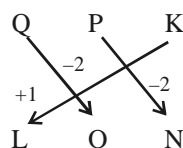
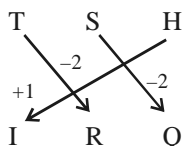
Therefore, the number 340 is wrong in the series.



Therefore, the number 215 is wrong in the series.

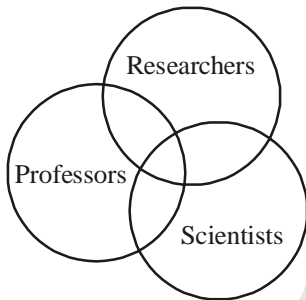


1. (1) The relationship is  $x : (2x - 4)$   
 $8 \times 2 - 4 = 16 - 4 = 12$   
 Similarly,  $6 \times 2 - 4 = 12 - 4 = 8$



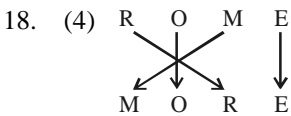
3. (2) Fire causes smoke. Smoke comes out when something is burnt in fire. Similarly, cloud causes rain.

13. (2) There is no 'V' letter in the given word.  
 14. (1) Temple and Church are places of worship. It does not imply that Hindus and Christians use the same place for worship. Church is different temple. Therefore, neither Conclusion I nor II follows.  
 15. (2) HIPPNO W ADIASM  
 HIPPNO **W** ADIASM  
 16. (4) Some professors may be researchers and vice-versa.  
 Some professors may be scientists and vice-versa.  
 Some researchers may be scientists and vice-versa.  
 Some professors who are researchers may be scientists.  
 Some researchers who are scientists may be professors.

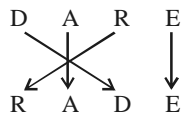


17. (2) Arrangement of words as per dictionary :

4. Convalesce  
 ↓  
 3. Convenience  
 ↓  
 2. Converge  
 ↓  
 5. Converse  
 ↓  
 1. Convince

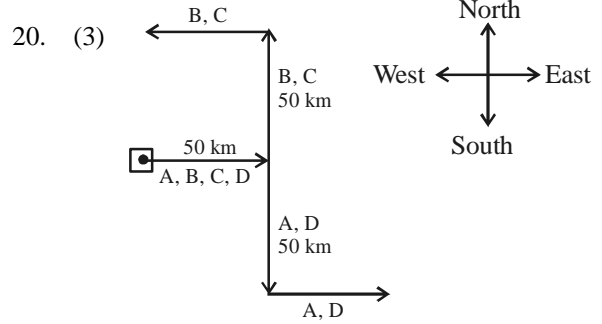


Similarly,



19. (1)
- |       |       |
|-------|-------|
| L ⇒ × | M ⇒ + |
| P ⇒ + | Q ⇒ - |

16 P 24 M 8 Q 6 M 2 L 3 = ?  
 ⇒ ? = 16 + 24 + 8 - 6 ÷ 2 × 3  
 ⇒ ? = 16 + 3 - 3 × 3  
 ⇒ ? = 16 + 3 - 9 = **10**



A ⇒ East, B ⇒ West, C ⇒ West, D ⇒ East.

21. (3) QMPN **PQR** **ROP** **QNO** **PQR** **MQRO** **PQR** **PPRR** **PQR** **P**

22. (4) Volume of sphere =  $\frac{4}{3}\pi r^3$

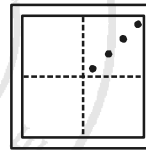
Volume of hemisphere =  $\frac{2}{3}\pi r^3$

Now,  $\frac{4}{3}\pi r^3 = \frac{2}{3}\pi r^3 \Rightarrow \frac{4}{3}r^3 = \frac{2}{3}(3\sqrt{2})^3$

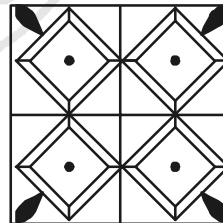
$\Rightarrow r^3 = \frac{2}{3} \times \frac{3}{4} \times 27 \times 2$

∴ r = 3 cm

23. (4)



24. (2)



25. (1) G ⇒ 58, 66, 77, 85, 98  
 U ⇒ 04, 12, 23, 31, 40  
 I ⇒ 00, 13, 21, 34, 42  
 D ⇒ 56, 69, 75, 87, 99  
 E ⇒ 01, 14, 20, 32, 43

Option	G	U	I	D	E
(1)	85	23	21	87	32
(2)	58	31	12	57	41
(3)	77	13	42	99	32
(4)	66	31	43	78	14

51. (4) Part of tank filled by pipes A and B in 1 minute

$$= \frac{1}{30} + \frac{1}{45} = \frac{3+2}{90} = \frac{1}{18} \text{ part}$$

$$\therefore \text{Part of tank filled in 12 minutes} = \frac{12}{18} = \frac{2}{3} \text{ part}$$

$$\text{Remaining part} = 1 - \frac{2}{3} = \frac{1}{3} \text{ part}$$

When pipe C is opened,

Part of tank filled by all three pipes

$$= \frac{1}{30} + \frac{1}{45} - \frac{1}{36} = \frac{6+4-5}{180} = \frac{5}{180} = \frac{1}{36}$$

$$\therefore \text{Time taken in filling } \frac{1}{3} \text{ part} = \frac{1}{3} \times 36 = 12 \text{ min.}$$

$$\therefore \text{Total time} = 12 + 12 = 24 \text{ minutes}$$

52. (4) Let A, B, C, D and E in kg. represent their respective weights. Then,

$$A + B + C = 84 \times 3 = 252 \text{ kg.}$$

$$A + B + C + D = 80 \times 4 = 320 \text{ kg.}$$

$$\therefore D = (320 - 252) \text{ kg} = 68 \text{ kg}$$

$$E = 68 + 3 = 71 \text{ kg.}$$

$$B + C + D + E = 79 \times 4 = 316 \text{ kg.}$$

Now,

$$(A + B + C + D) - (B + C + D + E) = 320 - 316$$

$$\Rightarrow A - E = 4 \text{ kg.}$$

$$\Rightarrow A = 4 + E = 4 + 71 = 75 \text{ kg.}$$

53. (4) If the number of females be x, then, number of males = 15000 - x

$$\therefore x \times \frac{10}{100} + (15000 - x) \times \frac{8}{100} = 16300 - 15000$$

$$\Rightarrow 10x + 120000 - 8x = 1300 \times 100$$

$$\Rightarrow 2x = 130000 - 120000 = 10000$$

$$\Rightarrow x = 5000$$

54. (3) Relative speed = 11 - 10 = 1 kmph

Distance covered in 6 minutes

$$= \frac{1000}{60} \times 6 \text{ metre} = 100 \text{ metre}$$

$$\therefore \text{Remaining distance} = 200 - 100 = 100 \text{ metre}$$

55. (3)  $675 = 5 \times 5 \times 3 \times 3 \times 3 = 3^3 \times 5^2$

$$\therefore \text{Required number} = 5.$$

56. (2)  $x^2 + x = 5$  (Given)

$$\text{Let, } x + 3 = a$$

$$\therefore \frac{1}{x+3} = \frac{1}{a}$$

Now,

$$a + \frac{1}{a} = (x+3) + \frac{1}{(x+3)} = \frac{(x+3)^2 + 1}{x+3}$$

$$= \frac{x^2 + 6x + 9 + 1}{x+3} = \frac{x^2 + 6x + 10}{x+3}$$

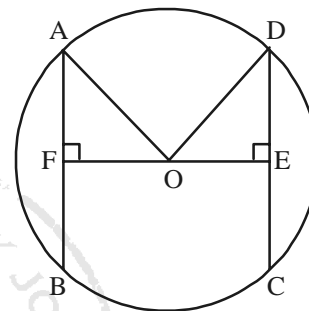
$$= \frac{x^2 + x + 5x + 10}{x+3} = \frac{5 + 5x + 10}{x+3} = \frac{5x + 15}{x+3}$$

$$= \frac{5(x+3)}{x+3} = 5$$

$$\therefore a^3 + \frac{1}{a^3} = \left(a + \frac{1}{a}\right)^3 - 3a \times \frac{1}{a} \left(a + \frac{1}{a}\right)$$

$$= (5)^3 - 3 \times 5 = 125 - 15 = 110$$

57. (1)



$$AB = 10 \text{ cm}$$

$$\therefore AF = FB = 5 \text{ cm}$$

$$CD = 24 \text{ cm}$$

$$\therefore CE = DE = 12 \text{ cm}$$

$$\text{Let } OE = x \text{ cm}$$

$$\therefore OF = (17 - x) \text{ cm}$$

$$\text{From } \triangle ODE, OD = \sqrt{OE^2 + DE^2} = \sqrt{x^2 + 12^2} \dots(i)$$

$$\text{From } \triangle OAF, OA = \sqrt{OF^2 + AF^2} = \sqrt{(17-x)^2 + 5^2} \dots(ii)$$

$$\therefore OA = OD$$

$$\therefore \sqrt{x^2 + 12^2} = \sqrt{(17-x)^2 + 5^2}$$

$$\Rightarrow x^2 + 144 = 289 - 34x + x^2 + 25$$

$$\Rightarrow 34x = 289 + 25 - 144 = 170$$

$$\Rightarrow x = \frac{170}{34} = 5$$

$\therefore$  From equation (i),

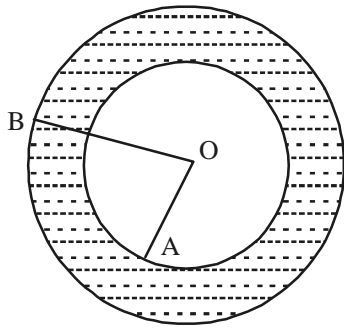
$$OD = \sqrt{x^2 + 12^2} = \sqrt{5^2 + 144} = \sqrt{169} = 13 \text{ cm.}$$

58. (4)  $x = (0.08)^2, y = \frac{1}{(0.08)^2} = \frac{10000}{64} = 156.25$

$$z = (1 - 0.08)^2 - 1 = 1 + (0.08)^2 - 2 \times 0.08 - 1 = (0.08)^2 - 2 \times 0.08$$

Clearly,  $z < x < y$

59. (4)



Let the radius of swimming pool be  $r$  metre.

Breadth of shaded part = 4 metre

$\therefore OB = (r + 4)$  metre

According to the question,

$$\pi \times OB^2 - \pi \times OA^2 = \frac{11}{25} \pi \times OA^2$$

$$\Rightarrow (r + 4)^2 - r^2 = \frac{11}{25} r^2$$

$$\Rightarrow r^2 + 8r + 16 - r^2 = \frac{11}{25} r^2 \Rightarrow 8r + 16 = \frac{11}{25} r^2$$

$$\Rightarrow 200r + 400 = 11r^2 \Rightarrow 11r^2 - 200r - 400 = 0$$

$$\Rightarrow 11r^2 - 220r + 20r - 400 = 0$$

$$\Rightarrow 11r(r - 20) + 20(r - 20) = 0$$

$$\Rightarrow (r - 20)(11r + 20) = 0$$

$$\Rightarrow r = 20 \text{ metre because } r \neq -\frac{20}{11} \text{ metre.}$$

60. (3) Here distance is constant.

$$\therefore \text{Speed} \propto \frac{1}{\text{Time}}$$

$$\therefore \text{Ratio of the speeds of A and B} = \frac{7}{2} = 7 : 8$$

$\therefore$  A's speed =  $7x$  kmph (let)

B's speed =  $8x$  kmph

$\therefore AB = 7x \times 4 = 28x$  km.

Let both trains cross each other after ' $t$ ' hours from 7 a.m.

According to the question,

$$7x(t + 2) + 8x \times t = 28x \Rightarrow 7t + 14 + 8t = 28$$

$$\Rightarrow 15t = 28 - 14 = 4$$

$$\Rightarrow t = \frac{4}{15} \text{ hours} = \left(\frac{4}{15} \times 60\right) \text{ min.} = 56 \text{ min.}$$

$\therefore$  Required time = 7 : 56 a.m.

61. (4) Let the marked price of the camera be Rs.  $x$ .

According to the question,

$$\frac{x \times 90}{100} = \frac{600 \times 120}{100}$$

$$\Rightarrow x \times 90 = 600 \times 120$$

$$\Rightarrow x = \frac{600 \times 120}{90} = \text{Rs. } 800$$

62. (2)  $\sec \theta + \tan \theta = 2 + \sqrt{5} \quad \therefore \sec^2 \theta - \tan^2 \theta = 1$

$$\Rightarrow (\sec \theta + \tan \theta)(\sec \theta - \tan \theta) = 1$$

$$\begin{aligned} \Rightarrow \sec \theta - \tan \theta &= \frac{1}{\sec \theta + \tan \theta} = \frac{1}{2 + \sqrt{5}} \times \frac{\sqrt{5} - 2}{\sqrt{5} - 2} \\ &= \frac{\sqrt{5} - 2}{5 - 4} = \sqrt{5} - 2 \end{aligned}$$

$$\therefore \sec \theta + \tan \theta + \sec \theta - \tan \theta = 2 + \sqrt{5} + \sqrt{5} - 2$$

$$\Rightarrow 2 \sec \theta = 2\sqrt{5}$$

$$\Rightarrow \sec \theta = \sqrt{5} \quad \dots(i)$$

Again,

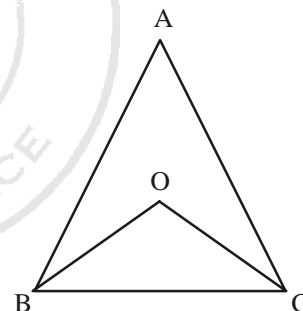
$$\sec \theta + \tan \theta - (\sec \theta - \tan \theta) = 2 + \sqrt{5} - \sqrt{5} + 2$$

$$\Rightarrow 2 \tan \theta = 4 \Rightarrow \tan \theta = 2 \quad \dots(ii)$$

$$\therefore \sin \theta = \frac{\tan \theta}{\sec \theta} = \frac{2}{\sqrt{5}}$$

63. (2) If  $a + b + c = 0$   
then  $a^2 + b^2 + c^2 - 3abc = 0$ .

64. (1)



$$\angle OBC = \frac{1}{2} \angle ABC, \quad \angle OCB = \frac{1}{2} \angle ACB$$

From  $\triangle OBC$ ,  $\angle OBC + \angle OCB + \angle BOC = 180^\circ$

$$\frac{1}{2}(\angle ABC + \angle ACB) + \angle BOC = 180^\circ$$

$$\Rightarrow \frac{1}{2}(180^\circ - \angle BAC) + \angle BOC = 180^\circ$$

$$\Rightarrow \frac{1}{2}(180^\circ - 100^\circ) + \angle BOC = 180^\circ$$

$$\Rightarrow \angle BOC = 180^\circ - 40^\circ = 140^\circ$$

65. (2) Let C complete the work in  $x$  days.

$$\therefore \text{B's 1 day's work} = \frac{1}{20} - \frac{1}{x}$$

$$\text{and, A's 1 day's work} = \frac{2-3}{60} + \frac{1}{x} = \frac{1}{x} - \frac{1}{60}$$



According to the question,

$$5\left(\frac{1}{x} - \frac{1}{60}\right) + 15\left(\frac{1}{20} - \frac{1}{x}\right) + \frac{18}{x} = 1$$

$$\Rightarrow \frac{5}{x} - \frac{1}{12} + \frac{15}{20} - \frac{15}{x} + \frac{18}{x} = 1$$

$$\Rightarrow \frac{5}{x} - \frac{15}{x} + \frac{18}{x} = 1 + \frac{1}{12} - \frac{3}{4}$$

$$\Rightarrow \left(\frac{5-15+18}{x}\right) = \frac{12+1-9}{12} \Rightarrow \frac{8}{x} = \frac{1}{3}$$

$$\Rightarrow x = 8 \times 3 = 24 \text{ days.}$$

66. (1)  $x = \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}, y = \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$

$$\therefore x + y = \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}} + \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$$

$$= \frac{(\sqrt{5}-\sqrt{3})^2 + (\sqrt{5}+\sqrt{3})^2}{(\sqrt{5}+\sqrt{3}) + (\sqrt{5}-\sqrt{3})}$$

$$= \frac{2((\sqrt{5})^2 + (\sqrt{3})^2)}{5-3} = 5+3=8$$

$$xy = \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}} \times \frac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}} = 1$$

$$\therefore \frac{x^2 + xy + y^2}{x^2 - xy + y^2} = \frac{(x+y)^2 - xy}{(x+y)^2 - 3xy}$$

$$= \frac{8^2 - 1}{8^2 - 3} = \frac{64 - 1}{64 - 3} = \frac{63}{61}$$

67. (2) Let 3 kg of first alloy and 4 kg of second alloy be mixed together.

$\therefore$  In 3 kg of mixture,

Tin = 1 kg

Iron = 2 kg

In 4 kg of mixture,

$$\text{Tin} = \frac{2}{5} \times 4 = \frac{8}{5} = 1.6 \text{ kg}$$

$$\text{Iron} = \frac{3}{5} \times 4 = \frac{12}{5} = 2.4 \text{ kg}$$

$$\therefore \text{Required ratio} = (1 + 1.6) : (2 + 2.4) = 2.6 : 4.4 = 13 : 22$$

68. (2) 65) 75070 (1154

$$\begin{array}{r} 65 \\ 100 \\ \hline 65 \\ 357 \\ \hline 325 \\ 320 \\ \hline 260 \\ 60 \end{array}$$

$$\therefore \text{Required number} = 75070 + (65 - 60) = 75075.$$

69. (1) 35 - 18 = 17

45 - 28 = 17

55 - 38 = 17

i.e. difference between the divisor and corresponding remainder is same.

LCM of 35, 45 and 55 = 3465

$$\therefore \text{Required number} = 3465 - 17 = 3448.$$

70. (4) Rate downstream = (6 + 1.5) kmph = 7.5 kmph

Rate upstream = (6 - 1.5) kmph = 4.5 kmph

According to question,

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\therefore \text{Required time} = \frac{22.5}{7.5} + \frac{22.5}{4.5} = 3 + 5 = 8 \text{ hours}$$

71. (2)  $\frac{1}{3+\sqrt{5}} = \frac{3-\sqrt{5}}{(3+\sqrt{5})(3-\sqrt{5})} = \frac{3-\sqrt{5}}{9-5} = \frac{3-\sqrt{5}}{4}$

$$\therefore 3 - \frac{3+\sqrt{5}}{4} - \frac{3-\sqrt{5}}{4} = \frac{12-3-\sqrt{5}-3+\sqrt{5}}{4} = \frac{6}{4} = \frac{3}{2}$$

72. (3) Average units consumption in 2012

$$= \frac{600 + 700 + 400 + 300 + 200}{5} = \frac{2200}{5} = 440 \text{ units}$$

Required months  $\Rightarrow$  July, August.

73. (4) Average units consumption in year 2013

$$= \frac{550 + 500 + 400 + 350 + 500}{5} = \frac{2300}{5} = 460 \text{ units.}$$

74. (4) In the month of November,

Difference = 500 - 200 = 300 units

In the month of August,

Difference = 700 - 500 = 200 units

75. (4) Total consumption in 2012 = 2200 units

Total consumption in 2013 = 2300 units

Percentage increase

$$= \left(\frac{2300 - 2200}{2200}\right) \times 100 = \frac{100}{22} = \frac{50}{11} = 4.5\%$$