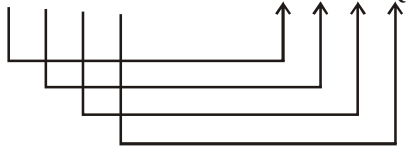
SSC CHSL - CHT1 : 180237 GRAND TEST HINTS AND SOLUTIONS

ANSWER KEY

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

1. (3) $14 \times 14 \times 2 = 392$
$14 \times 2 = 28$
Similarly,
$19 \times 19 \times 2 = 722$
$19 \times 2 = 38$

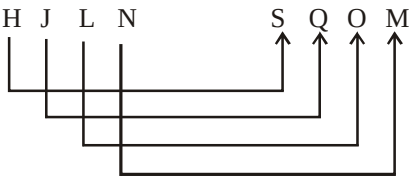
2. (3) D F H J W U S Q



Pairs of opposite letters.

Similarly,

H J L N S Q O M



3. (3) A professor works at a college, and a mechanic works at a garage.

4. (2) $P \xrightarrow{+1} Q \xrightarrow{+7} X \xrightarrow{+2} Z$

$B \xrightarrow{+1} C \xrightarrow{+14} Q \xrightarrow{-3} N$

$A \xrightarrow{+1} B \xrightarrow{+2} D \xrightarrow{+2} F$

$M \xrightarrow{+1} N \xrightarrow{+2} P \xrightarrow{+2} R$

5. (4) All except chalk are obtained from crops.

6. (2) $34 - 30 \Rightarrow (3 + 4) - (3 + 0) \Rightarrow 7 - 3 = 4.$
$44 - 31 \Rightarrow (4 + 4) - (3 + 1) \Rightarrow 8 - 4 = 4.$
$61 - 12 \Rightarrow (6 + 1) - (1 + 2) \Rightarrow 7 - 3 = 4.$
$25 - 21 \Rightarrow (2 + 5) - (2 + 1) \Rightarrow 7 - 3 = 4.$

7. (1) $F \xrightarrow{+3} I \xrightarrow{+3} L \xrightarrow{+3}$ O
$A \xrightarrow{+4} E \xrightarrow{+4} I \xrightarrow{+4}$ M
$K \xrightarrow{+2} M \xrightarrow{+2} O \xrightarrow{+2}$ Q

8. (4) The pattern is +0, +3, +8, +15, ... i.e.
$(1^2 - 1), + (2^2 - 1), + (3^2 - 1), + (4^2 - 1), ...$
So, missing term = $28 + (5^2 - 1) = 28 + 24 = 52.$

9. (4) $5 = 2^2 + 1$ $10 = 3^2 + 1$
$26 = 5^2 + 1$ $50 = 7^2 + 1$
$122 = 11^2 + 1$

10. (4) $(15 \times 6) + 2 = 92$
$(7 \times 6) + 2 = 44$
$(7 \times 15) + 2 = 107.$

11. (4) Only conclusion II follows. It was expected that crop condition wold improve after the rains.

12. (4) Difference between the ratios of Ann = 5 – 2 = 3
$: 3 \Rightarrow 21$

$$\therefore :1 = \frac{21}{3} = 7$$

13. (3) There is no 'A' letter in the given word. Therefore, the word SITUATION cannot be formed.

$\boxed{D\ I\ S\ T\ R}\ I\ \boxed{B\ U}\ T\ I\ O\ N \Rightarrow D\ I\ S\ T\ U\ R\ B$

$D\ I\ S\ \boxed{T}\ R\ I\ B\ \boxed{U\ T\ I\ O\ N} \Rightarrow T\ U\ T\ I\ O\ N$

$D\ I\ \boxed{S\ T\ R}\ I\ B\ \boxed{U\ T}\ I\ O\ N \Rightarrow T\ R\ U\ S\ T$

14. (1) There were all sparrows but six' means that six birds were not sparrows but only pigeons and ducks.
Similarly, Number of sparrows + number of ducks = 6
Number of sparrows + Number of pigeons = 6.
This is possible only when there are 3 sparrows, 3 pigeons and 3 ducks i.e. 9 birds in all.

15. (4)

16. (3) The numbers given in the set are perfect squares.
$4 = (2)^2$; $25 = (5)^2$; $81 = (9)^2$
Similarly, $16 = (4)^2$; $64 = (8)^2$; $100 = (10)^2$

17. (1) 1st January was Friday.
First Wednesday $\Rightarrow$ 6th January
Fourth Wednesday $\Rightarrow$ 27th January
Three days after January 27 $\Rightarrow$ 30th January

18. (2)

19. (1)

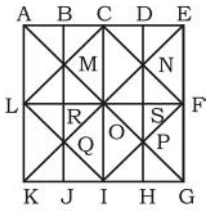
20. (3) J = 10 $\Rightarrow$ Position number in English alphabetical series.

21. (4) From the two different views of the dice it is clear that '6' lies opposite to '5'.

22. (4) The number '4' is present only in rectangle.

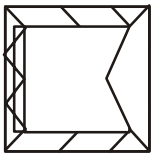
23. (1) The colours adjacent to yellow are (orange, blue) and (red, pink). Hence violet will be opposite to yellow.

24. (2) The figure may be labelled as shown.



The horizontal lines are AK, BJ, CI, DH and EG i.e. 5 in number.
The vertical lines are AE, LF and KG i.e. 3 in number.
The slanting lines are LC, CF, FI, LI, EK and AG i.e. 6 in number.
Thus, there are 5 + 3 + 6 = 14 straight lines in the figure.

25. (2)



51. (4) Sum of the present ages of four boys
$= 9 \times 4 + 20 = 56$ years
Sum of the present ages of five boys
$= 15 \times 5 = 75$ years.
$\therefore$ Present age of new boy $= 75 - 56 = 19$ years.

52. (2) By options, only (b) is the same answer.

$$(8 + 2) + (7 - 2) + (10 \times 2) + \left(\frac{20}{2}\right)$$

$= 10 + 5 + 20 + 10 = 45$ (hence proved)

53. (2) Let the speed and length of the train be s m/s and x m respectively.
ATQ,

$$s + 3 \times \frac{5}{18} = \frac{x}{36}$$

$$\Rightarrow s = \frac{x}{36} - \frac{15}{18} \qquad ...(1)$$

and,

$$s + 6 \times \frac{5}{18} = \frac{x}{30}$$

$$\Rightarrow s = \frac{x}{30} - \frac{30}{18} \qquad ...(2)$$

Equating (1) and (2), we get,

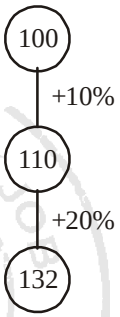
$$\frac{x}{36} - \frac{15}{18} = \frac{x}{30} - \frac{30}{18}$$

$$\Rightarrow \frac{x}{30} - \frac{x}{36} = \frac{30}{18} - \frac{15}{18}$$

$$\Rightarrow \frac{6x}{36 \times 30} = \frac{15}{18}$$

$\therefore$ x = 150 m

54. (4) Let the original price = 100 units

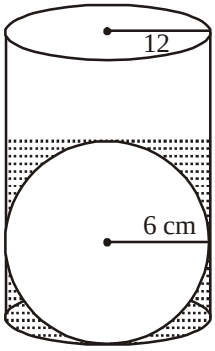


According to the question, 132 units = Rs. 33

1 unit = Rs. $\frac{33}{132}$

100 units = Rs. $\frac{33}{132} \times 100$ = Rs. 25

55. (2)



Let the increase in height = 4 cm

$$\Rightarrow \pi R^2 h = \frac{4}{3}\pi r^3$$

$$\Rightarrow (12)^2 \times h = \frac{4}{3} \times 6^3 \Rightarrow h = \frac{4}{3} \times \frac{216}{144} = 2 \text{ cm}$$

56. (1) $a^3 + b^3 + c^3 - 3abc$
$= (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ac)$

$$= \frac{1}{2}(a+b+c)(2a^2 + 2b^2 + 2c^2 - 2ab - 2bc - 2ac)$$

$$= \frac{1}{2}(a+b+c)[(a-b)^2 + (b-c)^2 + (c-a)^2]$$

$$\therefore \frac{a^3+b^3+c^3-3abc}{a+b+c} = \frac{1}{2}\left[(a-b)^2 + (b-c)^2 + (c-a)^2\right]$$

$$= \frac{1}{2}(9+25+1) = \frac{35}{2} = 17.5$$

57. (4) Required nmber $= \frac{80\times120}{100} = 96$

58. (1) $\left[\left\{-\frac{1}{2}^2\right\}^{-2}\right]^{-1} = \left\{\left(-\frac{1}{2}\right)^2\right\} - 2\times-1$

$$= \left(-\frac{1}{2}\right)^{2\times2} = \left(-\frac{1}{2}\right)^4 = \frac{1}{16}$$

59. (4) If average cost of 1 pen = ` x, then
$30x + 75 \times 2 = 510$

$\Rightarrow 30x = 510 - 150 = 360 \Rightarrow x = \frac{360}{30} = $ `12

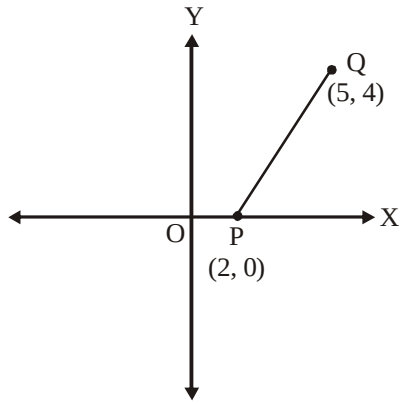
60. (3) Here, $\sqrt[3]{175616} = 56$

$\sqrt[3]{175.616} = 5.6$

$\sqrt[3]{0.175616} = 0.56$ and $\sqrt[3]{0.000175616} = 0.056$

$\therefore$ Required sum = 5.6 + 0.56 + 0.056 = 6.216

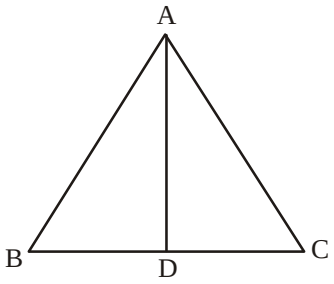
61. (4)



PQ = $\sqrt{(5-2)^2 + (4-0)^2} = \sqrt{9+16} = 5$

$\therefore$ Area of circle = $\pi r^2 = 25\pi$ sq. units.

62. (4)



BD = DC = AD

$\angle BAD = 30°$

From ΔABD, $\angle BAD = 30°$

$\therefore \angle ADB = \angle BAD = 30°$

$\therefore \angle ADB = 180° - 2\times30° = 120°$

$\therefore \angle ADC = 180° - 120° = 60°$

$\therefore$ AD = DC

$\Rightarrow \angle DAC = \angle ACD = 60°$

63. (4) Area of square = $(\text{side})^2$
$= (24)^2 = 576$ cm^2
Area of rectangle = length × breadth
$= 576 - 176 = 400$ cm^2

$\therefore$ Breadth of rectangle $= \frac{400}{24} = \frac{50}{3} = 16\frac{2}{3}$ cm

64. (2) $a\sin\theta + b\cos\theta = c$ ...(1)
Let $a\cos\theta - b\sin\theta = x$ ...(2)
Squaring and adding equation (1) and (2)
$(a\sin\theta + b\cos\theta)^2 + (a\cos\theta - b\sin\theta)^2 = c^2 + x^2$
$\Rightarrow a^2 + b^2 = c^2 + x^2$

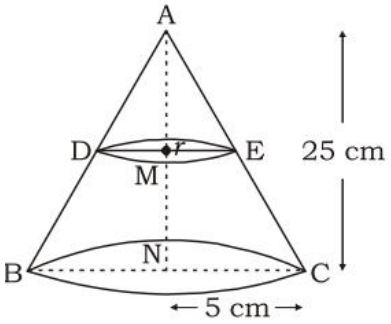
$\Rightarrow x = \pm\sqrt{a^2 + b^2 - c^2}$

65. (3) 203, 213, 223, 233, 243, 253, 263, 273, 283, 293
Total 10 inegers.
300 to 399 - Total no. of integers = 100
$\Rightarrow$ Total no. of integers = 100 + 10 = 110.

66. (4) Effective profit percent $= \left(20 + 25 + \frac{20\times25}{100}\right) = 50\%$

$\therefore$ Original cost price $= \frac{100}{150}\times1200 =$ Rs. 800

67. (1)



$\Delta AME \sim \Delta ANC$

$\therefore \frac{25-h}{25} = \frac{r}{5}$

$\Rightarrow h = 25 - 5r$ ...(1)

Volume of frustum (V)

$= \frac{1}{3}\pi[5^2 + r^2 + 5r]h$

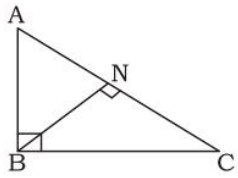
$\Rightarrow 110 = \frac{1}{3}\pi[25 + r^2 + 5r](25 - 5r)$

$\Rightarrow \frac{5}{3}\pi[(5-r)(5^2 + r^2 + 5r)] = 110$

$\Rightarrow \frac{5}{3}\pi[5^3 - r^3] = 110 \Rightarrow 5^3 - r^3 = \frac{110 \times 3}{5\pi}$

$\Rightarrow 125 - r^3 = \frac{110 \times 3}{5 \times \frac{22}{7}} \Rightarrow r = (104)^{1/3}$ cm

68. (4)



In ΔABC & ΔBNC,

$\angle ABC = \angle BNC = 90°$

and $\angle C = \angle C$ (common)

$\therefore \Delta ABC \sim \Delta BNC$

and BC = $\sqrt{10^2 - 6^2} = 8$ cm

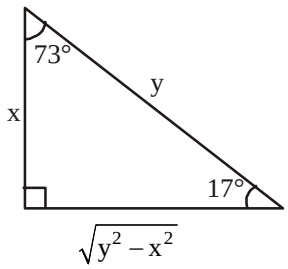
$\therefore \frac{AC}{BC} = \frac{BC}{NC} \Rightarrow \frac{10}{8} = \frac{8}{NC}$

$\Rightarrow NC = 6.4$

$\therefore AN = 10 - 6.4 = 3.6$

$\therefore AN : NC = 3.6 : 6.4 = 9 : 16$

69. (2) $\sin 17° = \frac{x}{y} \Rightarrow \frac{P}{H}$



$\Rightarrow \sec 17° - \sin 73°$

$= \frac{y}{\sqrt{y^2 - x^2}} - \frac{\sqrt{y^2 - x^2}}{y}$

$= \frac{y^2 - (y^2 - x^2)}{(y)(\sqrt{y^2 - x^2})} = \frac{y^2 - y^2 + x^2}{y\sqrt{y^2 - x^2}} = \frac{x^2}{y\sqrt{y^2 - x^2}}$

70. (3) $4x = \sec$

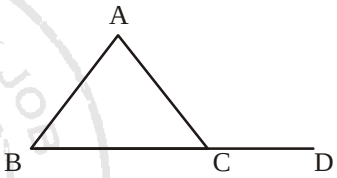
$\Rightarrow x = \frac{\sec\theta}{4}$

Again, $\frac{4}{x} = \tan\theta \Rightarrow \frac{1}{x} = \frac{\tan\theta}{4}$

$\therefore 8\left(x^2 - \frac{1}{x^2}\right) = 8\left(\frac{\sec^2\theta}{16} - \frac{\tan^2\theta}{16}\right)$

$= \frac{8}{16}\left(\sec^2\theta - \tan^2\theta\right) = \frac{1}{2}$

71. (2)



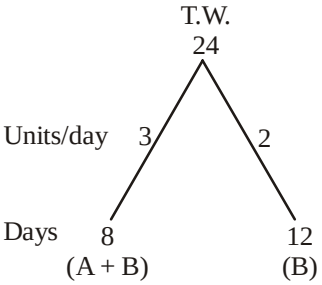
$\angle ACD = \angle ABC + \angle BAC$

$\Rightarrow 108° = \frac{\angle A}{2} + \angle A$

$\Rightarrow \frac{3\angle A}{2} = 108°$

$\Rightarrow \angle A = \frac{108 \times 2}{3} = 72°$

72. (3)



B's one day work = 2 units/day

A's one day work = 3 – 2 = 1 unit/day

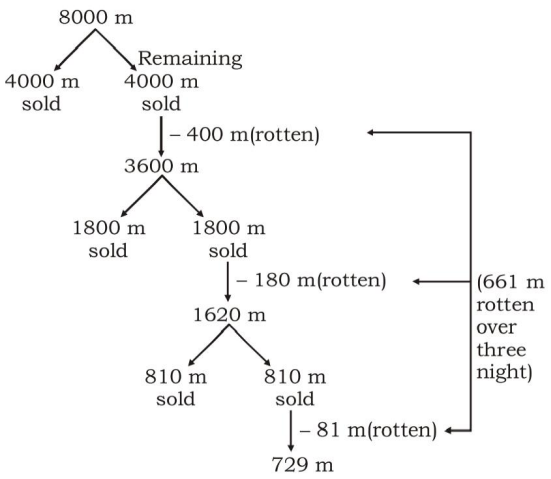
4 days work of B = 4 × 2 units/day = 8 units

Work left = 24 – 8 = 16 units

A will complete the remaining work in

$\frac{16 \text{ units}}{1 \text{ unit/day}} = 16$ days

73. (2) Let there were 8000 mangoes initially.
Then,



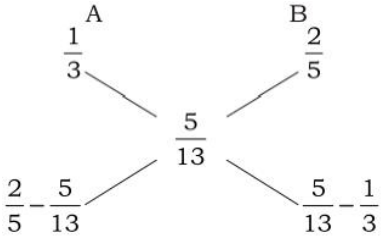
Hence 661 m = 1983 $\Rightarrow$ m = 3
Hence the total no. of mangoes = 3 × 8000 = 24000

74. (1) In first alloy, zinc = $\frac{1}{3}$

In second alloy, zinc = $\frac{2}{5}$

In the new alloy, zinc = $\frac{5}{13}$

By the rule of Alligation,



$\therefore$ Required ratio

$$= \left(\frac{2}{5} - \frac{5}{13}\right) : \left(\frac{5}{13} - \frac{1}{3}\right)$$

$$= \frac{26-25}{65} : \frac{15-13}{39} = \frac{1}{65} : \frac{2}{39} = \frac{1}{5} : \frac{2}{3} = 3 : 10$$

75. (3) Let the radius of base of second cylinder = R

$\Rightarrow 2(\pi r^2 h) = \pi R^2 h \Rightarrow 2r^2 = R^2 \Rightarrow R = r\sqrt{2}$