



**Centres at:** ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA

## SSC MOCK TEST - 31

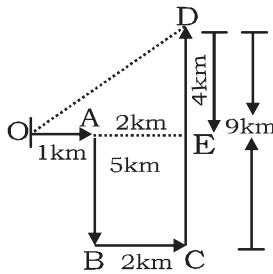
(ANSWER WITH SOLUTION)

### GENERAL INTELLIGENCE

1. (C) Diagonally multiply by 4.

$$\begin{aligned} 1 \times 4 &= 4 \\ 6 \times 4 &= 24 \\ 2 \times 4 &= 8 \\ 9 \times 4 &= \mathbf{36} \end{aligned}$$

2. (A)  $a \underline{b} n \underline{c} b / \underline{a} \underline{b} n \underline{c} b / \underline{a} \underline{b} n \underline{c} b$



3. (C)

According to question,

$$\begin{aligned} OD &= \sqrt{(OE)^2 + (DE)^2} \\ &= \sqrt{(1+2)^2 + (9-5)^2} \\ &= \sqrt{3^2 + 4^2} \\ &= \sqrt{9+16} = \sqrt{25} = 5\text{km.} \end{aligned}$$

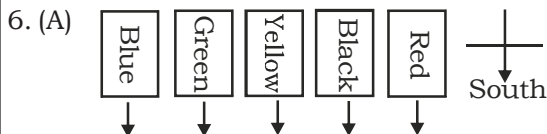
4. (A) 

|   |   |   |   |   |     |   |   |   |   |   |   |   |
|---|---|---|---|---|-----|---|---|---|---|---|---|---|
| W | O | M | A | N | S   | E | R | V | A | N | T |   |
| ↓ | ↓ | ↓ | ↓ | ↓ | and | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |   |
| 1 | 2 | 3 | 4 | 5 |     | 6 | 7 | 8 | 9 | 4 | 5 | 0 |

Similarly,

|   |   |   |   |   |   |
|---|---|---|---|---|---|
| V | O | T | E | R | S |
| ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| 9 | 2 | 0 | 7 | 8 | 6 |

5. (B)



7. (C) After changing the signs according to the question, the correct equation will be -

$$(C) 20 - 5 \div 6 + 12 \times 4 = 67 \frac{1}{6}$$

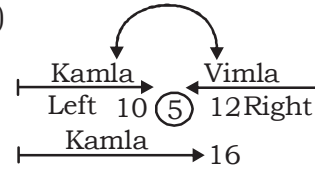
$$\Rightarrow 20 - \frac{5}{6} + 48 = 67 \frac{1}{6}$$

$$\Rightarrow 68 - \frac{5}{6} = 67 \frac{1}{6}$$

$$\Rightarrow 67 \frac{1}{6} = 67 \frac{1}{6} \text{ (Correct)}$$

8. (B)

9. (A)



New position of Vimla from the right =  $12 + 5 + 1 = 18^{\text{th}}$

10. (A) Q R C Y N P D

↓ ↓ ↓ ↓ ↓ ↓ ↓  
5 2 9 8 0 6 7

11. (B)

12. (B)

13. (D)

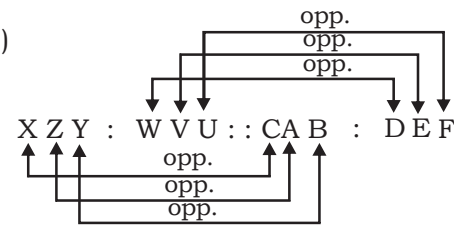
14. (C) 

|    |    |    |    |    |    |    |    |   |   |   |   |
|----|----|----|----|----|----|----|----|---|---|---|---|
| R  | U  | X  | T  | R  | P  | B  | E  | H | Q | O | M |
| ↓  | ↓  | ↓  | ↓  | ↓  | ↓  | ↓  | ↓  | ↓ | ↓ | ↓ | ↓ |
| +3 | +3 | -2 | -2 | +3 | +3 | -2 | -2 |   |   |   |   |

15. (A)

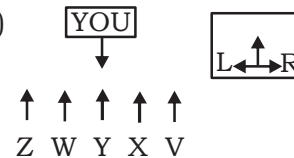
$$\frac{63}{6+3=9} : \frac{9}{6+8=14} :: \frac{68}{6+8=14} : \frac{14}{6+8=14}$$

16. (D)



17. (C)

18. (C)

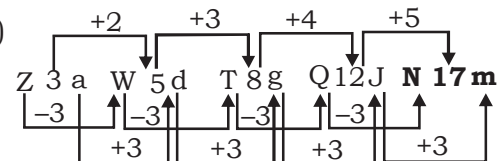


19. (B)

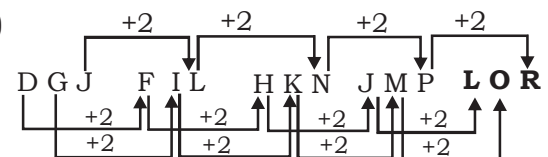
Exploit   Explore   Explosive  
1                    5                    2

Exponent   Exposition  
3                    4

20. (B)



21. (B)





**Centres at:** ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA

22. (D)  $\begin{array}{cccccc} 321 & 301 & 261 & 181 & 21 \\ \downarrow & \uparrow & \uparrow & \uparrow & \uparrow \\ -20 & -40 & -80 & -160 & \end{array}$

23. (A)  $\begin{array}{cccccc} 2816 & 704 & 176 & 44 & 11 \\ \downarrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \div 4 & \div 4 & \div 4 & \div 4 & \div 4 \end{array}$

24. (D)  $\begin{array}{cccccc} 1 & 5 & 21 & 57 & 121 & 221 \\ \downarrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +2^2 & +4^2 & +6^2 & +8^2 & +10^2 & \end{array}$

25. (B) 26. (A)  
27. (D) According to English Alphabet the ranking value of

R U S H  
↓ ↓ ↓ ↓  
 $18 + 21 + 19 + 8 = 66$

Similarly,  
G I R L  
↓ ↓ ↓ ↓  
 $7 + 9 + 18 + 12 = 46$

28. (D) T O R T I S E - V O T V K U G  
 $\begin{array}{cccccccc} \downarrow & & & & & & & \\ +2 & & & & & & & \\ & \downarrow & & & & & & \\ & +2 & & & & & & \\ & & \downarrow & & & & & \\ & & & \downarrow & & & & \\ & & & & \downarrow & & & \\ & & & & & \downarrow & & \\ & & & & & & \downarrow & \\ & & & & & & & \downarrow \\ & & & & & & & +2 \end{array}$

Similarly,  
E L E P H A N T - G N G R J C P V  
 $\begin{array}{cccccccc} \downarrow & & & & & & & \\ +2 & & & & & & & \\ & \downarrow & & & & & & \\ & +2 & & & & & & \\ & & \downarrow & & & & & \\ & & & \downarrow & & & & \\ & & & & \downarrow & & & \\ & & & & & \downarrow & & \\ & & & & & & \downarrow & \\ & & & & & & & \downarrow \\ & & & & & & & +2 \end{array}$

29. (A) I. {Uma, Suma} II. {Neha, Suma}  
II. {Hema, Sudha, Uma} IV. {Uma, Neha}

From I, II, III and IV.  
Hema  
Sudha  
Uma  
Neha  
Suma

30. (B) 31. (A) 32. (C)  
33. (D) 34. (B) 35. (A)

36. (B)  $\begin{array}{cccc} \text{Embryo} & \text{Neonate} & \text{Infant} & \text{Child} \\ 4 & 1 & 3 & 2 \end{array}$

37. (D)  $\begin{array}{ccc} \text{Foundation} & \text{walls} & \text{ceiling} \\ 3 & 4 & 5 \end{array}$

$\begin{array}{cc} \text{Plastering} & \text{Painting} \\ 1 & 2 \end{array}$

38. (B) 39. (D) 40. (A)

41. (A) (A) B F J Q  
 $\begin{array}{cccc} \downarrow & \uparrow & \uparrow & \uparrow \\ +4 & +4 & +7 & \end{array}$

(B) R U Z G  
 $\begin{array}{cccc} \downarrow & \uparrow & \uparrow & \uparrow \\ +3 & +5 & +7 & \end{array}$

(C) G J O V  
 $\begin{array}{cccc} \downarrow & \uparrow & \uparrow & \uparrow \\ +3 & +5 & +7 & \end{array}$

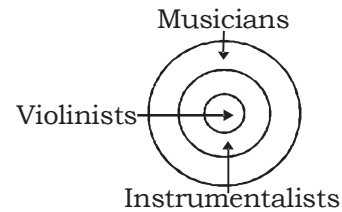
(D) I L Q X  
 $\begin{array}{cccc} \downarrow & \uparrow & \uparrow & \uparrow \\ +3 & +5 & +7 & \end{array}$

42. (C)  $\begin{array}{cc} +2 & +2 \\ \text{A E G C} & \text{H L N J} \\ +2 & +2 \\ +2 & +2 \\ \text{O S V Q} & \text{V Z B X} \\ +3 & +2 \end{array}$

43. (C) 42 is divisible by 3.

44. (B)

45. (A)



46. (B)

47. (A)

48. (A)

49. (D)

50. (B)



**Centres at:** ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA

### ARITHMETIC

51. (C); According to the question:

$$\Rightarrow 240 = \left( S + 3 \times \frac{5}{18} \right) \times 10$$

$$\Rightarrow 240 = 10S + \frac{150}{18}$$

$$\Rightarrow 240 - \frac{50}{6} = 10S$$

$$\Rightarrow 240 - \frac{25}{3} = 10S$$

$$\Rightarrow \frac{720 - 25}{3 \times 10} = S$$

$$\Rightarrow S = \frac{695}{30} \text{ m/s}$$

$$\Rightarrow \frac{695}{30} \times \frac{18}{5} = 83.4 \text{ kms/hr.}$$

52. (A) Speed of the boatman along stream

$$= \frac{1}{5/60} = 12 \text{ kms/hr.}$$

$$\text{So, speed of stream} = \frac{1}{2} (12 - 6)$$

$$= \frac{6}{2} = 3 \text{ kms/hr}$$

53. (B) A can complete the whole work in  
=  $5 \times 3 = 15$  days

$$\text{and B can do in} = 10 \times \frac{5}{2} = 25 \text{ days}$$

So, both can do in

$$= \frac{1}{\frac{1}{15} + \frac{1}{25}} = \frac{75}{8} = 9 \frac{3}{8} \text{ days}$$

54. (C) Ratio of the profit of A, B and C according to the question = 3 : 1 : 1

difference of ratios of A and C is 2

then 2 ratio = 400

□ 5 ratios = 1000

Total profit = ` 1000

55. (D) Let the numbers are 40 and 50

According to the question

Increment of 20% on 1<sup>st</sup> = 48

Decrease of 20% on 2<sup>nd</sup> = 40

So ratio = 48 : 40 = 6 : 5

56. (B) According to the question:

$$\frac{\text{Perimeter}}{\text{Area}} = \frac{2\pi \times 3}{\pi(3)^2} = 2:3$$

57. (B)  $\sqrt{5} = 2.24$  (given)

$$\text{So, } \frac{3\sqrt{5}}{2\sqrt{5} - 0.48} = \frac{3 \times 2.24}{2 \times 2.24 - 0.48} = 1.68$$

58. (D) Given  $m^n = 121$

$$m^n = 11^2$$

So  $m = 11$  &  $n = 2$

$$\text{then } (m - 1)^{n+1} = (11 - 1)^{2+1} = (10)^3$$

$$(m - 1)^{n+1} - 1000$$

59. (C) According to the question.

$$\begin{array}{l} A = 20 \\ B = 30 \\ C = 60 \end{array} \left. \vphantom{\begin{array}{l} A \\ B \\ C \end{array}} \right\} \rightarrow 60 \begin{array}{l} \nearrow 3 \\ \rightarrow 2 \\ \searrow 1 \end{array}$$

Work completed in three days

$$= 3 \times 3 + 2 + 1 = 12$$

So, 12 units = 3 days

□ 60 units = 15 days.

60. (A)  $\sqrt{2} = 1.414$

$$\text{So, } \frac{1}{\sqrt{2}+1} = \frac{1}{1.41+1} = \frac{1}{2.414} = 0.414$$

61. (A)  $4b^2 + \frac{1}{b^2} = 2$

$$\square \left( 2b + \frac{1}{b} \right)^2 = 4b^2 + \frac{1}{b^2} + 2 \times 2b \times \frac{1}{b}$$

$$\Rightarrow 2 + 4 = 6$$

$$\square 2b + \frac{1}{b} = \sqrt{6}$$

$$\text{Now } 8b^3 + \frac{1}{b^3}$$

$$= \left( 2b + \frac{1}{b} \right)^3 - 3 \times 2b \times \frac{1}{b} \left( 2b + \frac{1}{b} \right)$$

$$= (\sqrt{6})^3 - 6\sqrt{6} = 0$$



Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA

62. (B) Let man bought N oranges in first case so:

According to the question  
= 20 oranges = ` 60

$$1 \text{ orange} = \frac{60}{20} = ` 3$$

So,  $N = ` 3N$

$$\text{In second case} = \frac{60}{30} \times N = 2N$$

$$\begin{aligned} \text{Selling price} &= \frac{60}{25} \times 2N = \frac{120}{25}N \\ &= \frac{24}{5}N = 4.8N \end{aligned}$$

$$\text{Cost price} = 3N + 2N = 5N$$

$$\text{Selling price} = 4.8N$$

$$\% \text{ Loss} = \frac{0.2N}{5N} \times 100 = 4\%$$

63. (B) According to the question

$$\begin{aligned} \text{Cost price of TV for Rita} \\ &= 16,800 - 800 = 16,000 \end{aligned}$$

$$\text{So } A \times \frac{80}{100} = 16000$$

$$A = 20,000$$

64. (C) The number is =  $\frac{\sqrt{12} + \sqrt{18}}{\sqrt{3} + \sqrt{2}}$

$$= \frac{\sqrt{12} + \sqrt{18} \times \sqrt{3} - \sqrt{2}}{(\sqrt{3} + \sqrt{2})(\sqrt{3} - \sqrt{2})}$$

$$= \frac{\sqrt{36} + \sqrt{54} - \sqrt{24} - \sqrt{36}}{3 - 2}$$

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

65. (B) Given  $x - y = 2$  ... (1)

$$x^2 + y^2 = 20 \quad \dots (2)$$

$$(x - y)^2 = x^2 + y^2 - 2xy$$

$$\Rightarrow (2)^2 = 20 - 2xy$$

$$2xy = 16 \Rightarrow xy = 8$$

$$(x + y)^2 = x^2 + y^2 + 2xy = 20 + 16 = 36$$

66. (A)  $\sqrt{2} = 1.4142$  then  $\frac{7}{3 + \sqrt{2}}$

$$\Rightarrow \frac{7}{3 + 1.4142} = \frac{7}{4.4142} = 1.59$$

67. (C) Average temperature of week =  $39^\circ$   
So total temperature =  $39 \times 7 = 273 = 273^\circ$   
& total of 1<sup>st</sup> 4 days and last 4 days  
temperature =  $37 \times 4 + 41 \times 4$   
=  $148 + 164 = 312^\circ$

$$\begin{aligned} \text{So, temperature of 4}^{\text{th}} \text{ days} \\ &= 312 - 273 = 39^\circ \end{aligned}$$

68. (B) Total age of the husband and wife today  
=  $25 \times 2 + 4 \times 2 = 58$  years

According to the question today's  
total age including child =  $20 \times 3 = 60$   
years

$$\text{So, age of the child} = 60 - 58 = 2 \text{ years.}$$

69. (A) According to the question:

$$\text{Total reduction} = 10 \times 1.8 = 18$$

$$\text{Now } (10x + y) - (10y + x) = 18$$

$$9x - 9y = 18$$

$$(x - y) = 2$$

70. (C) Reduced price of apple

$$= \frac{4000 \times 20\%}{16} = \frac{4000 \times 20}{100 \times 16} = ` 50$$

71. (B) Let the distance = D

So, According to the question:

$$\Rightarrow 9 \times \left( t + \frac{36}{60} \right) = 10t$$

$$9 \times \frac{36}{60} = 10t - 9t \Rightarrow t = \frac{54}{10} \text{ hrs}$$

$$\text{Total distance} = 10 \times \frac{54}{10} = 54 \text{ kms.}$$

72. (B) Ratio of the speeds of A and B = 2 : 1

$$\text{So time} = 1 : 2 \text{ \& B and C} = 1 : 3$$

$$\text{Ratio of the times of A : B : C} \Rightarrow 1 : 2 : 6$$

According to the question:

$$6 \text{ ratio} = 1 \text{ hrs } 54 \text{ m} = 114 \text{ m}$$

$$\square \quad 2 \text{ ratio} = \frac{114}{3} = 38 \text{ min.}$$

73. (C) Interest of  $\left( 4 - 2\frac{1}{2} \right) = 1\frac{1}{2}$  years

$$\text{is} = 1067.20 - 1012 = 55.20$$

$$\text{So for 1 year} = \frac{55.20}{3} \times 2$$

$$\text{So for } 2\frac{1}{2} \text{ years} = \frac{55.20}{3} \times 2 \times \frac{5}{2} = ` 92$$

$$\text{So principle} = (1012 - 92) = 920$$

$$\text{So rate of interest} = \frac{980 \times r \times 1}{100}$$

$$= \frac{55.20}{3} \times 2$$

$$\Rightarrow r = \frac{55.20 \times 2}{3} \times \frac{100}{920} = 4\%$$



**Centres at:** ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA

74. (A) ∴ These two triangles are similar triangle.

$$\square \text{ Ratio of their height} = \sqrt{\text{ratio of their area}}$$

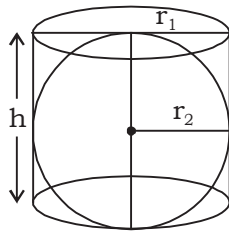
$$= \sqrt{\frac{1}{4}} = 1 : 2$$

75. (B) According to the question:

$$\Rightarrow \frac{\frac{1}{3}\pi \left(r + \frac{10r}{100}\right)^2 \times \left(h + \frac{10h}{100}\right) - \frac{1}{3}\pi r^2 h}{\frac{1}{3}\pi r^2 h} \times 100$$

$$\Rightarrow \frac{1.331 r^2 h^2 - r^2 h^2}{r^2 h^2} \times 100 = 33.1\%$$

76. (D) Ratio of the radius of right circular cylinder and the sphere



$$\Rightarrow r_1 = r_2 \Rightarrow r_1 : r_2 = 1 : 1$$

Ratio of curved surface =

$$\Rightarrow 2\pi r_1 h : 4\pi r_2^2 = 1 : 1$$

because (h = 2r<sub>2</sub>)

77. (A) According to the question:

$$(9\% - 7\%) = 2\% \text{ of discount} = ` 15$$

$$\text{So } 100\% = \frac{15}{2} \times 100 = ` 750$$

78. (B)  $\frac{1}{1 \times 3} + \frac{1}{3 \times 5} + \frac{1}{5 \times 7} \dots \dots \dots \frac{1}{19 \times 21}$

$$= \frac{1}{2} \left( 1 - \frac{1}{3} + \frac{1}{3} - \frac{1}{5} + \frac{1}{5} - \frac{1}{7} \dots \dots \frac{1}{19} - \frac{1}{21} \right)$$

$$\Rightarrow \frac{1}{2} \left( 1 - \frac{1}{21} \right) = \frac{20}{2 \times 21} = \frac{10}{21}$$

79. (D)  $\sqrt{7+4\sqrt{3}} - \sqrt{7-4\sqrt{3}}$

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

$$\Rightarrow 2 + \sqrt{3} - 2 - \sqrt{3}$$

$$\Rightarrow 2\sqrt{3}$$

80. (A) Let the price = 30 & 40 respectively  
 $\Rightarrow$  Increase of 20% on Rail = 48 &

$\Rightarrow$  Increase of 10% on Bus = 33

$$\Rightarrow \text{Bus} : \text{Rail} = 33 : 48 = 11 : 16$$

81. (A) Let the total volume is 100x kg.  
 According to question.

$$\frac{12x}{100x-25} = \frac{22}{100}$$

$$\Rightarrow 1200x = 22(100x - 25)$$

$$\Rightarrow 1200x = 2200x - 22 \times 25$$

$$\Rightarrow 1000x = 22 \times 25$$

$$x = \frac{22 \times 25}{1000} = \frac{11}{20}$$

$$\square \text{ Volume} = 100 \times \frac{11}{20} = 55 \text{ kg}$$

82. (C) Ratio of A : B =  $\frac{2}{3} : 1 = 2 : 3$

$$\& B : C = \frac{1}{4} : 1 = 1 : 4$$

$$\text{So } A : B : C = 2 : 3 : 12$$

$$\text{Share of B} = \frac{3}{17} \times 6800 = 1200.$$

83. (C) Volume of the big sphere

$$= \frac{4}{3} \pi (6)^3 + \frac{4}{3} \pi (8)^3 + \frac{4}{3} \pi (10)^3$$

$$= \frac{4}{3} \pi (6^3 + 8^3 + 10^3) = \frac{4}{3} \pi \times 1728$$

Now radius of big sphere

$$\frac{4}{3} \pi R^3 = \frac{4}{3} \pi (1728)$$

$$R = 12 \text{ cms}$$

84. (C) According to the question:

$$4\pi r^2 = 154 \text{ cm}^2$$

$$r^2 = 49 \Rightarrow r = 7 \text{ cm}$$

$$\square \text{ Side of the square} = 7 \times 2 = 14 \text{ cm}$$

$$\text{So Area} = 14 \times 14 = 196 \text{ cm}^2$$

85. (C) A can do the whole work in =  $\frac{4 \times 3}{2} = 6$  days

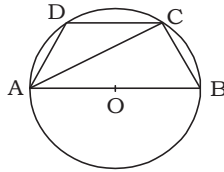
B can do the same work in

$$= \frac{6 \times 5}{3} = 10 \text{ days}$$

$$\text{Both can do in} = \frac{1}{\frac{1}{6} + \frac{1}{10}} = \frac{15}{4} = 3 \frac{3}{4} \text{ days}$$

**Centres at:** ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA

86. (B)



$\angle ADC = 140^\circ$   
 So,  $\angle CBA = 180^\circ - 140^\circ = 40^\circ$   
 (Because ABCD is cyclic quadrilateral)  
 Now, In  $\triangle ABC$

$\angle ACB = 90^\circ$  (Semi circle angle)  
 So,  $\angle BAC = 180^\circ - (90^\circ + 40^\circ) = 50^\circ$

87. (B) Tangent drawn from an external point A

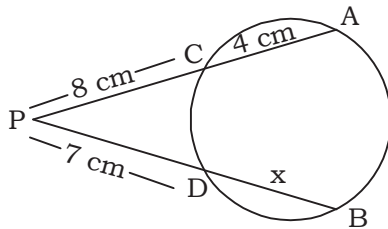
so,  $AD = AE$  (by property)  
 $BD = BF$  and  $CE = FC$   
 So,  $AD = AB + BD = AB + BF$   
 and  $AD = AE = AC + CE = AC + CF$

$\square 2AD = AB + AC + BF + CF = AB + AC + BC$

88. (C)  $\therefore$  ABCD is a cyclic quadrilateral

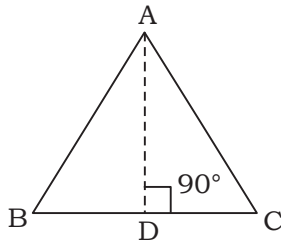
- $\square \angle B + \angle D = 180^\circ$
- $\square$  In  $\triangle ABD$   $\angle D = 180 - 80 = 100^\circ$   
 $\angle BPC = 180^\circ - (160^\circ) = 20^\circ$

89. (C) According to the property



$\Rightarrow PD \times PB = PC \times PA$   
 $(7 + x) \times 7 = 12 \times 8$   
 $7 + x = \frac{12 \times 8}{7}$   
 $x = 13.7 - 7 = 6.7 \text{ cm}$

90. (B)



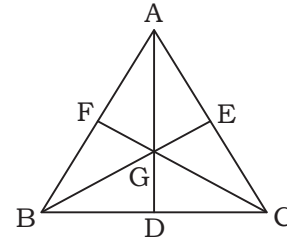
$AB = BC = CA$  (given)  
 $BC = BD + DC = 2BD$   
 $(\because BD = DC \text{ by congruent property})$   
 $\square$  In  $\triangle ABD$ ,  $AB^2 = AD^2 + BD^2$

$$AB^2 = AD^2 + \left(\frac{AB}{2}\right)^2$$

$$\left(BD = \frac{BC}{2} = \frac{AB}{2}\right)$$

$4AB^2 - AB^2 = 4AD^2$   
 $\Rightarrow 3AB^2 = 4AD^2$

91. (B)  $\therefore$  G is the centroid of ABC



So,  $AG = \frac{2}{3} AD$

$BG = \frac{2}{3} BE$

$CG = \frac{2}{3} CF$

So  $AG + BG + CG = \frac{2}{3} (AD + BE + CF)$

92. (B)

$$\sqrt{2 + \sqrt{2 + \sqrt{2 + 2 \cos 8\theta}}}$$

we know that  $\cos^{2\theta} = 2\cos^2 2\theta - 1$

$$\Rightarrow \sqrt{2 + \sqrt{2 + \sqrt{2 + 2(2\cos^2 4\theta - 1)}}}$$

$$\Rightarrow \sqrt{2 + \sqrt{2 + \sqrt{4\cos^2 4\theta}}}$$

$$\Rightarrow \sqrt{2 + \sqrt{2 + 2\cos 4\theta}}$$

$$\Rightarrow \sqrt{2 + \sqrt{2 + 2(2\cos^2 2\theta - 1)}}$$

$$\Rightarrow \sqrt{2 + \sqrt{2 + 4\cos^2 2\theta - 2}}$$

$$\Rightarrow \sqrt{2 + 2\cos 2\theta}$$

$$\Rightarrow \sqrt{2 + 2(2\cos^2 \theta - 1)}$$

$$\Rightarrow \sqrt{2 + 4\cos^2 \theta - 2}$$

$$\Rightarrow \sqrt{4\cos^2 \theta}$$

$$\Rightarrow 2\cos \theta$$

93. (C)

$x = 7\cos \theta$

so  $x^2 = 49 \cos^2 \theta \Rightarrow y = 9\sin \theta$

so  $y^2 = 81 \sin^2 \theta$

Now according to the question

$$\frac{x^2}{49} + \frac{y^2}{81} = \frac{49 \cos^2 \theta}{49} + \frac{81 \sin^2 \theta}{81}$$

$$\Rightarrow \sin^2 \theta + \cos^2 \theta = 1$$



**Centres at: ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA**

94. (A)  $\sin 639 + \cos 639 = 2$   
 Squaring both the sides.  
 $\sin^2 639 + \cos^2 639 + 2 \sin 639 \cdot \cos 639 = 4$   
 $1 + 2 \sin 639 \cdot \cos 639 = 4$   
 Maximum value of  $\sin 639 \cdot \cos 639$  should be 1  
 Same angle of  $639$   
 so  $1 + 2 \neq 4$   
 $3 \neq 4$  (No solution)

95. (D) 
$$\frac{\tan^2 60^\circ - 2 \tan^2 45^\circ + \sec^2 30^\circ}{3 \sin^2 45^\circ \sin 90^\circ + \cos^2 60^\circ \cos^3 0^\circ}$$
  

$$\Rightarrow \frac{(\sqrt{3})^2 - 2(1)^2 + \left(\frac{2}{\sqrt{3}}\right)^2}{3\left(\frac{1}{\sqrt{2}}\right)^2 (1) + \left(\frac{1}{2}\right)^2 (1)^3}$$
  

$$\Rightarrow \frac{3 - 2 + \frac{4}{3}}{\frac{3}{2} + \frac{1}{4}} = \frac{\frac{3+4}{3}}{\frac{6+1}{4}} = \frac{7}{3} \times \frac{4}{7} \Rightarrow \frac{4}{3}$$

96. (A)  $\sin 10^\circ + \sin 20^\circ + \sin 30^\circ \dots \sin 360^\circ$   
 $\Rightarrow (\sin 10^\circ + \sin 350^\circ) + (\sin 20^\circ + \sin 340^\circ) + (\sin 30^\circ + \sin 330^\circ) \dots \sin 360^\circ$   
 $\Rightarrow (\sin 10^\circ - \sin 10^\circ) + (\sin 20^\circ - \sin 20^\circ) \dots \sin 360^\circ$   
 $\Rightarrow 0$  ( $\sin 360^\circ = 0$ )

97. (C) Given  $x = a \cos^{2639} \sin^{639}$   
 &  $y = a \sin^{2639} \cos^{639}$   
 (1) 
$$\frac{(x^2 + y^2)^3}{x^2 y^2}$$
  

$$= \frac{(a^2 \cos^4 \theta \sin^2 \theta + a^2 \sin^4 \theta \cos^2 \theta)^3}{a^4 \cos^4 \theta \sin^2 \theta \sin^4 \theta \cos^2 \theta}$$
  

$$\Rightarrow \frac{a^6 \sin^6 \theta \cos^6 \theta}{a^4 \sin^6 \theta \cos^6 \theta} = a^2$$

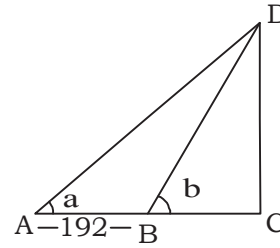
(2) 
$$\frac{\sqrt{x^2 + y^2}}{\sqrt[3]{XY}}$$
  

$$= \frac{\sqrt{a^2 \cos^4 \theta \sin^2 \theta + a^2 \sin^4 \theta \cos^2 \theta}}{\sqrt[3]{a^2 \sin^3 \theta \cos^3 \theta}}$$
  

$$= \frac{a \sin \theta \cos \theta}{a^{2/3} \sin \theta \cos \theta} = a^{1/3}$$

So both (1) and (2) are independent from  $639$ . So both are correct.

98. (B)



$$\tan \square = \frac{5}{12} \text{ (given)}$$

$$\& \tan \square = \frac{3}{4} \text{ (given)}$$

$$\tan \square = \frac{h}{AC} \Rightarrow h = \frac{5}{12} AC$$

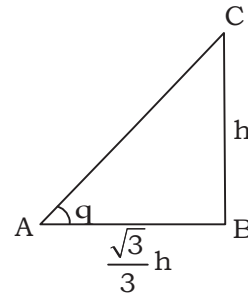
$$\& \tan \square = \frac{h}{BC} \Rightarrow h = \frac{3}{4} BC$$

$$\Rightarrow \frac{5}{12} AC = \frac{3}{4} (AC - 192) = \frac{3}{4} AC - 48 \times 3$$

$$\Rightarrow AC = 3 \times 48 \times 3 = 144 \times 3$$

$$\text{So, } h = \frac{5}{12} \times 144 \times 3 = 180 \text{ m.}$$

99. (C)



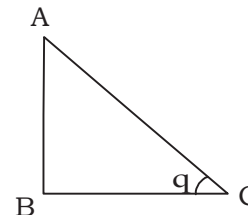
Let the elevation =  $639^\circ$

$$\tan 639 = \frac{h}{\sqrt{3}h} \times 3$$

$$\tan 639 = \sqrt{3}$$

$$639 = 60^\circ$$

100. (D)



AB = 2 feet

BC =  $2 \times 2 = 4$  feet

Let the angle of elevation =  $639^\circ$

$$\tan 639 = \frac{2}{4}, \tan 639 = \frac{1}{2}$$

$$639 = \tan^{-1} \frac{1}{2}$$



**Centres at:** ★ MUKHERJEE NAGAR ★ MUNIRKA ★ UTTAM NAGAR ★ DILSHAD GARDEN ★ ROHINI ★ NARELA

**SSC MOCK TEST - 31**  
**ANSWER**

|         |         |         |         |          |          |          |          |          |
|---------|---------|---------|---------|----------|----------|----------|----------|----------|
| 1. (C)  | 24. (D) | 47. (A) | 70. (C) | 93. (C)  | 116. (D) | 139. (C) | 162. (D) | 185. (B) |
| 2. (A)  | 25. (B) | 48. (A) | 71. (B) | 94. (A)  | 117. (D) | 140. (B) | 163. (A) | 186. (A) |
| 3. (C)  | 26. (A) | 49. (D) | 72. (B) | 95. (D)  | 118. (B) | 141. (D) | 164. (A) | 187. (B) |
| 4. (A)  | 27. (D) | 50. (B) | 73. (C) | 96. (A)  | 119. (A) | 142. (C) | 165. (D) | 188. (C) |
| 5. (B)  | 28. (D) | 51. (C) | 74. (A) | 97. (C)  | 120. (B) | 143. (D) | 166. (A) | 189. (A) |
| 6. (A)  | 29. (A) | 52. (A) | 75. (B) | 98. (B)  | 121. (B) | 144. (A) | 167. (C) | 190. (B) |
| 7. (C)  | 30. (B) | 53. (B) | 76. (D) | 99. (C)  | 122. (B) | 145. (D) | 168. (A) | 191. (B) |
| 8. (B)  | 31. (A) | 54. (C) | 77. (A) | 100. (D) | 123. (C) | 146. (D) | 169. (A) | 192. (C) |
| 9. (A)  | 32. (C) | 55. (D) | 78. (B) | 101. (D) | 124. (A) | 147. (B) | 170. (C) | 193. (B) |
| 10. (A) | 33. (D) | 56. (B) | 79. (D) | 102. (C) | 125. (D) | 148. (C) | 171. (B) | 194. (C) |
| 11. (B) | 34. (B) | 57. (B) | 80. (A) | 103. (D) | 126. (C) | 149. (A) | 172. (A) | 195. (B) |
| 12. (B) | 35. (A) | 58. (D) | 81. (A) | 104. (C) | 127. (C) | 150. (C) | 173. (A) | 196. (C) |
| 13. (D) | 36. (B) | 59. (C) | 82. (C) | 105. (D) | 128. (B) | 151. (C) | 174. (A) | 197. (A) |
| 14. (C) | 37. (D) | 60. (A) | 83. (C) | 106. (B) | 129. (B) | 152. (B) | 175. (C) | 198. (B) |
| 15. (A) | 38. (B) | 61. (A) | 84. (C) | 107. (D) | 130. (A) | 153. (A) | 176. (C) | 199. (A) |
| 16. (D) | 39. (D) | 62. (B) | 85. (C) | 108. (C) | 131. (A) | 154. (A) | 177. (C) | 200. (B) |
| 17. (C) | 40. (A) | 63. (B) | 86. (B) | 109. (B) | 132. (A) | 155. (B) | 178. (B) |          |
| 18. (C) | 41. (A) | 64. (C) | 87. (B) | 110. (B) | 133. (C) | 156. (A) | 179. (C) |          |
| 19. (B) | 42. (C) | 65. (B) | 88. (C) | 111. (C) | 134. (A) | 157. (A) | 180. (B) |          |
| 20. (B) | 43. (C) | 66. (A) | 89. (C) | 112. (A) | 135. (C) | 158. (A) | 181. (D) |          |
| 21. (B) | 44. (B) | 67. (C) | 90. (B) | 113. (B) | 136. (B) | 159. (A) | 182. (D) |          |
| 22. (D) | 45. (A) | 68. (B) | 91. (B) | 114. (D) | 137. (B) | 160. (D) | 183. (C) |          |
| 23. (A) | 46. (B) | 69. (A) | 92. (B) | 115. (D) | 138. (D) | 161. (C) | 184. (D) |          |

151. (C) 'speaking' in place of 'to speak'

152. (B) 'he could' in place of 'could he'

153. (A) 'places' in place of 'place'

154. (A) 'had the officer' in place of 'the officer had'

155. (B) 'he has been trying' in place of 'he is trying'

173. (A) Concomitant means attendant

**Regarding any corrections in this solution or test paper pls sms test**

**no. and question no. on 8860330003**