

Note: Section I is compulsory. Solve any THREE (3) questions from Section II. However, question No. NINE (9) is compulsory.

**SECTION - I**

**Q.2** Write short answers to any SIX (6) questions: 12

- i If  $A = \begin{bmatrix} 4 & 0 \\ -3 & 2 \end{bmatrix}$  then find  $|A|$ .
- ii Simplify  $\sqrt{64x^3y^2}$
- iii Simplify  $5^{3^2} \div (5^2)^3$
- iv Find the value of "x" if  $\log_{64} 8 = \frac{x}{2}$
- v If  $\log 2 = 0.3010$ ,  $\log 3 = 0.4771$ ,  $\log 5 = 0.6990$  then find the value of  $\log 45$
- vi Simplify  $\sqrt{45} - 3\sqrt{20} + 4\sqrt{5}$
- vii Define binomial surd.
- viii Factorize  $144a^2 + 24a + 1$
- ix Factorize  $2x - 128x^3$

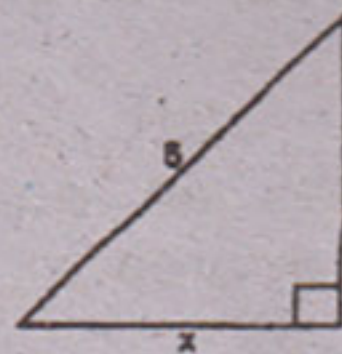
**Q.3** Write short answers to any SIX (6) questions: 12

- i Find square root by factorization  $x^2 - 1 + \frac{1}{4x^2}$
- ii Solve  $9 - 7x > 19 - 2x$ , where  $x \in R$
- iii Solve  $|2x + 3| = 11$
- iv Find the values of m and c by expressing in the form of  $y = mx + c$ ;  
 $2x + y - 2 = 0$
- v If  $F = \frac{9}{5}C + 32$ , then find F if  $C = 50^\circ$ .
- vi Find the distance between two points  $A(5,2)$ ,  $B(-3, -2)$
- vii Find the mid point between two points  $A(4, -4)$ ,  $B(-4,4)$
- viii What is meant by  $A.S.A \cong A.S.A$
- ix Find the unknown values of  $x^\circ$  and  $y^\circ$  in given figure.

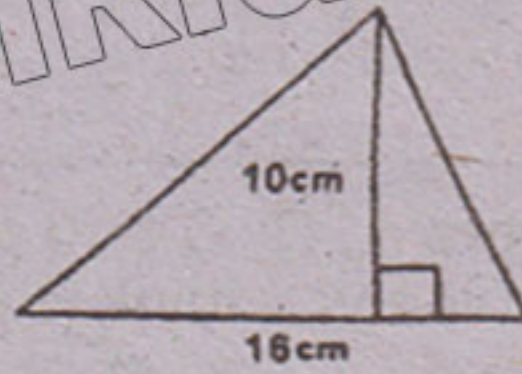


**Q.4** Write short answers to any SIX (6) questions: 12

- i Define Bisector of an angle.
- ii Verify that 13cm, 12cm and 5cm are the sides of a triangle.
- iii Define Ratio.
- iv Find the value of 'x'.



- v Verify that the triangle having following measures of sides is right-angled triangle:  
 $a = 1.5\text{cm}$ ,  $b = 2\text{cm}$ ,  $c = 2.5\text{cm}$
- vi Find the area of a square whose length of one side is 9cm.
- vii Find the area of given figure



- viii Define orthocentre.
- ix Construct a  $\triangle ABC$ , in which  
 $m\overline{AB} = 4.2\text{cm}$ ,  $m\overline{BC} = 3.9\text{cm}$ ,  $m\overline{CA} = 3.6\text{cm}$

**SECTION-II**

(Every question = 8 marks, each part = 4 marks)

**Q.5(a)** Solve by Cramer's rule:

$$\begin{aligned} 2x + 3y &= -6 \\ 2x + 5y &= -10 \end{aligned}$$

(b) Simplify:  $\left(\frac{a^p}{a^q}\right)^{p+q} \cdot \left(\frac{a^q}{a^r}\right)^{q+r} \div 5(a^p \cdot a^r)^{p-r}$ ,  $a \neq 0$

**Q.6(a)** Use log tables to find the value of  $\sqrt[3]{2.709} \times \sqrt{1.239}$

(b) If  $6x - \frac{1}{6x} = 6$ , then find the value of  $216x^3 - \frac{1}{216x^3}$

**Q.7(a)** If  $(x+2)$  is a factor of  $3x^2 - 4kx - 4k^2$ , then find the values of k.

(b) Use division method to find the square root of  $\frac{x^2}{y^2} - 10\frac{x}{y} + 27 - 10\frac{y}{x} + \frac{y^2}{x^2}$  ( $x \neq 0, y \neq 0$ )

**Q.8(a)** Solve for 'x':  $|x + 2| - 3 = 5 - |x + 2|$

(b) Construct a triangle PQR and draw its altitudes, if  $m\overline{PQ} = 6\text{cm}$ ,  $m\overline{QR} = 4.5\text{cm}$ ,  $m\overline{PR} = 5.5\text{cm}$

**Q.9** Prove that the bisectors of the angles of a triangle are concurrent.

OR

Prove that triangles on equal bases and of equal altitudes are equal in area.