

PART - I

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

- i What is meant by adjoint of a matrix?
- ii If $A = \begin{bmatrix} 2 & 3 \\ 1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & -4 \\ -2 & -1 \end{bmatrix}$ then find $2A + 3B$
- iii Simplify: $\frac{4(3)^n}{3^{n+1} - 3^n}$
- iv Simplify: $\sqrt[4]{81y^{-12}x^{-8}}$
- v Calculate: $\log_3 2 \times \log_2 81$
- vi Find the value of x: $\log x = 0.0044$
- vii If $a + b = 10$ and $a - b = 6$ then find the value of $a^2 + b^2$
- viii Simplify: $\sqrt[5]{243x^5y^{10}z^{15}}$
- ix Factorize: $125x^3 - 216y^3$

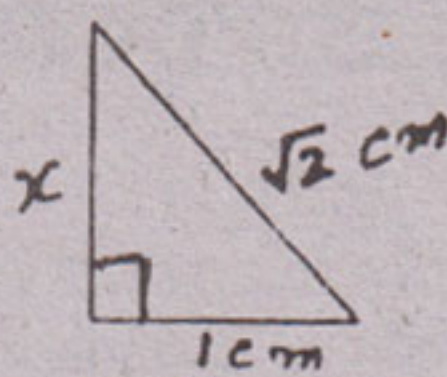
Q.3 Write short answers to any SIX (6) questions: 12

- i Use factorization to find the square root of:
 $4x^2 - 12x + 9$
- ii Solve the inequality: $4x - 10.3 \leq 21x - 1.8$
- iii Define strict inequalities.
- iv Write the given equation in the form of $y = mx + c$:
 $3 - 2x + y = 0$
- v Define cartesian plane.
- vi Find the distance between two points:
 $A(-4, \sqrt{2}), B(-4, -3)$
- vii Define right angle triangle.
- viii What is meant by $H.S \cong H.S$?
- ix One exterior angle formed on producing one side of a parallelogram is 40° . Find the measures of its interior angles.

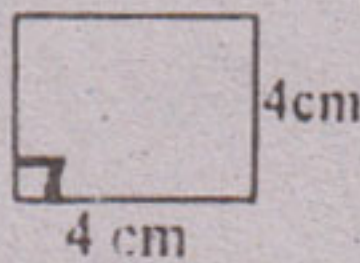
Q.4 Write short answers to any SIX (6) questions: 12

- i Define bisection of an angle.
- ii Justify that 2 cm, 3 cm and 5 cm are not the lengths of triangle.
- iii Define ratio.
- iv Define similar triangles.

v Find the value of x:



vi Find the area of given figure:



- vii Verify that the triangle having the following measures of sides are right-angled: $a = 5\text{cm}, b = 12\text{cm}, c = 13\text{cm}$
- viii Define ortho centre
- ix Construct a $\triangle ABC$, in which: $m \overline{AB} = 4.8\text{cm}, m \overline{BC} = 3.7\text{cm}, m \angle B = 60^\circ$

PART-II

Note: Attempt any THREE questions in all.
But question No. 9 is Compulsory.

Q.5(a) Solve the equation with the help of matrix inverse method: $3x - 4y = 4, x + 2y = 8$ 4

(b) Simplify: $\left(\frac{a^{2r}}{a^{r+m}}\right)\left(\frac{a^{2m}}{a^{m+n}}\right)\left(\frac{a^{2n}}{a^{n+r}}\right)$ 4

Q.6(a) Use logarithm table to find the value of: $\sqrt[5]{2.709} \times \sqrt[7]{1.239}$ 4

(b) If $a + b + c = 7$ and $ab + bc + ca = 9$ then find the value of $a^2 + b^2 + c^2$ 4

Q.7(a) Factorize by factor theorem: $x^3 - x^2 - 22x + 40$ 4

(b) Simplify to the lowest form:

$$\frac{x^3 - 8}{x^2 - 4} \times \frac{x^2 + 6x + 8}{x^2 - 2x + 1}$$

Q.8(a) Solve the inequalities: $-6 < \frac{x+2}{4} < 6$ 4

(b) Construct $\triangle ABC$, draw perpendicular bisectors of its sides and verify that they are concurrent:
 $m \overline{AB} = 4\text{cm}, m \overline{BC} = 4.8\text{cm}, m \overline{AC} = 3.6\text{cm}$

Q.9 Prove that "the right bisectors of the sides of a triangle are concurrent"

OR

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