

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

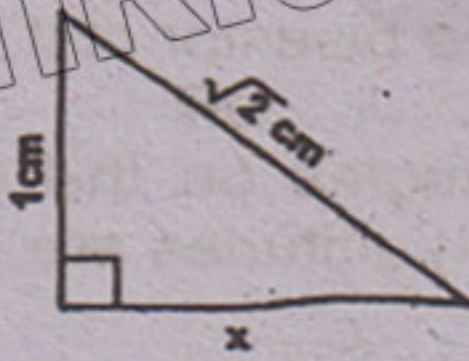
- i Perform the indicated operations and simplify.
 $[1 \ 3 \ 2] + [2 \ 1 \ 0] - [1 \ 3 \ 2]$
- ii Use law of exponents to simplify $(2x^5y^4)(-8x^{-3}y^2)$
- iii Find the value of x and y, if $x = iy - 3 = 6 - 7i$
- iv Find the value of x from the statement $\log_2 x = 5$
- v If $\log 2 = 0.3010$, $\log 3 = 0.4771$, $\log 5 = 0.6990$, then find the value of $\log 32$.
- vi if $a + b = 10$ and $a - b = 6$, then find the value of $(a^2 + b^2)$
- vii Simplify $\left(\sqrt{2} + \frac{1}{\sqrt{3}}\right)\left(\sqrt{2} - \frac{1}{\sqrt{3}}\right)$
- viii Factorize $3x^2 - 75y^2$
- ix Use remainder theorem to find the remainder when $8x^4 + 4x^3 - 3x + 2$ is divided by $(x + 3)$

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

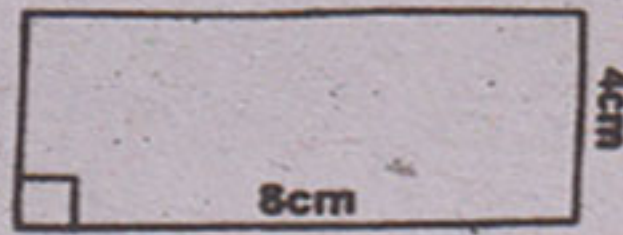
- i Find the L.C.M of the expression $39x^7y^3z$ and $91x^5y^6z^7$
- ii Solve for 'x' $|8x - 3| = |4x + 5|$
- iii Solve the inequality $-4 < 3x + 5 < 8$
- iv Draw the graph of the equation $y = 4x$
- v Find the values of 'm' and 'c' by expressing in the form of $y = mx + c$, $2x - y = -3$
- vi Find the distance between the following pairs of points A (3, -11), B(3, -4)
- vii Find the mid point of the line segment joining pair of points A(4, -11), B(4, -4)
- viii What is meant by $S.A.A \cong S.A.A$
- ix Define quadrilateral.

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

- i How are the right bisectors of the sides of a triangle?
- ii Can the following set of the lengths be the lengths of the sides of a triangle? 3cm, 4cm, 5cm
- iii What are similar triangles?
- iv Find the unknown value of 'x' in figure.



- v What is Pythagoras theorem?
- vi What is altitude of a triangle?
- vii Find the area.



- viii Define Circumcentre.
- ix Construct a $\triangle XYZ$ in which $m\overline{XY} = 5.5\text{cm}$, $m\overline{ZX} = 4.5\text{cm}$, $m\angle Z = 90^\circ$

SECTION-II

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

Q.5(a) Solve by using Cramer's rule $3x - y = -4$
 $4x - 5y = 6$

(b) simplify $\sqrt{\frac{(216)^{\frac{2}{3}}(25)^{\frac{1}{2}}}{(0.04)^{-\frac{3}{2}}}}$

Q.6(a) Use logarithm to find value of $\sqrt{\frac{0.7214 \times 20.37}{(60.8)}}$

(b) If $l+m+n=7$ and $l^2+m^2+n^2 = 81$, then find value of $lm+mn+ln$

Q.7(a) If $(x - 1)$ is a factor of $x^3 - kx^2 + 11x - 6$, then find the value of k.

(b) Use division method to find the square root of

$$\frac{x^2}{y^2} - 10\frac{x}{y} + 27 - 10\frac{y}{x} + \frac{y^2}{x^2}$$

Q.8(a) Solve the equation

$$\frac{2x}{2x+5} = \frac{2}{3} - \frac{5}{4x+10}, \quad x \neq \frac{-5}{2}$$

(b) Construct $\triangle ABC$. Draw the bisectors of its angles $m\overline{AB} = 4.2\text{cm}$, $m\overline{BC} = 6\text{cm}$ and $m\overline{CA} = 5.2\text{cm}$

Q.9 Prove that "Any point inside an angle, equidistant from its arms, is on the bisector of it."

OR

Prove that "Triangles on the same bases and of the same (i.e., equal) altitudes are equal in area."