

Mathematics (Science Group)	Ninth Guiranwala Board 2019	Paper - I
Time: 2.10 hrs	Subjective (Group - II)	Marks : 60

Note: Section I is compulsory. Attempt three (3) questions from Section II. Question No. 9 is compulsory.

SECTION-I

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

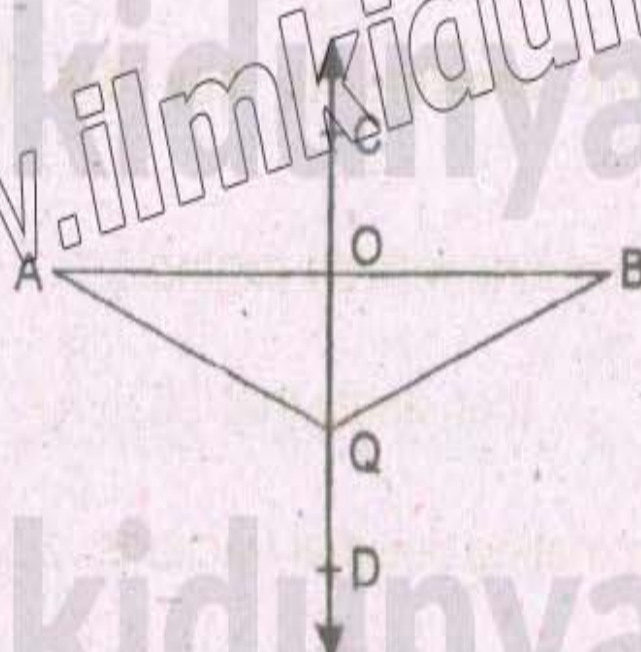
- i Define zero matrix with an example.
- ii If $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$, then verify that $(A^t)^t = A$
- iii Define terminating decimal fractions.
- iv Simplify $\left(\frac{8}{125}\right)^{\frac{4}{3}}$ by using laws of indices.
- v Find the value of x in $\log_3 x = 5$
- vi Express 9.018×10^{-6} in ordinary notation.
- vii Express $\frac{3}{4} \sqrt[3]{128}$ in the simplest form.
- viii Define polynomial with an example.
- ix Factorize: $144a^2 + 24a + 1$

3. Write short answers to any SIX (6) questions: (2×6=12)

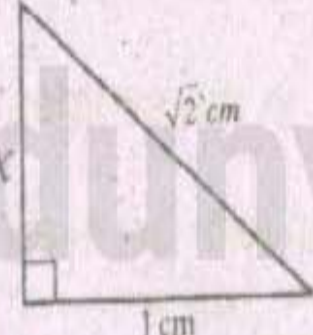
- i Find H.C.F. of $91x^5y^6z^7$ and $39x^7y^3z$.
- ii Solve: $\sqrt{3x+4} = 2$
- iii Solve: $\frac{1}{2}|3x+2| - 4 = 11$
- iv Find the value of 'm' and 'c' of the line $x - 2y = -2$ by expressing it in the form of $y = mx + c$.
- v Verify whether the point (0, 0) lies on the line $2x - y + 1 = 0$ or not
- vi Find the distance between pair of points A(9, 2) and B(7, 2).
- vii Find the mid-point of the line segment joining A(-8, 1) and B(6, 1)
- viii Define S.S.S. postulate.
- ix One angle of a parallelogram is 130° . Find measure of its remaining angles.

4. Write short answers to any SIX (6) questions: (2×6=12)

- i If \overline{CD} is right bisector of line segment \overline{AB} , then find $m\angle O A$ and $m\angle O Q$



- ii Explain that the given lengths can be the sides of a triangle or not: 2 cm, 4 cm, 7 cm
- iii Define congruent triangles.
- iv Find the value of x in the given figure:



- v Verify that the triangle having following sides is a right angled: $a = 9$ cm, $b = 12$ cm, $c = 15$ cm
- vi Find the area of the given figure:



- vii Define rectangular region.
- viii Construct $\triangle ABC$ in which $m\angle A = 4.8$ cm, $m\angle B = 3.7$ cm, $m\angle C = 60^\circ$
- ix Define orthocentre.

SECTION - II

(Each question carries 8 marks and every part carries 4 marks.)

5(a) Solve by using matrix inversion method:

$$2x + y = 3; 6x + 5y = 1$$

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

6(a) Prove that: $\log_a \left(\frac{m}{n}\right) = \log_a m - \log_a n$

(b) Simplify: $\frac{1}{x-1} - \frac{1}{x+1} - \frac{2}{x^2+1} - \frac{4}{x^4-1}$

7(a) Factorize: $x^4 + \frac{1}{x^4} - 3$

(b) Find the square root by division method:

$$4xy^4 + 12x^3 + x^2 - 12x + 4$$

8(a) Solve the inequality: $3 \geq \frac{7-x}{2} \geq 1$

(b) Construct the $\triangle ABC$ and draw bisectors of its angles:

$$m\angle A = 4.5 \text{ cm}, m\angle B = 3.1 \text{ cm}, m\angle C = 5.2 \text{ cm}$$

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

OR

Prove that the triangles on the same base and of the same (i.e. equal) altitudes are equal in area.