

BN- IXXVII-1
MATHEMATICS (9th)
 (Fresh / Re-appear)
(Question Paper 3)

Time Allowed : 3 Hrs

Total Marks : 75

Note: There are **THREE** sections in this paper i.e A, B & C. Attempt section A and return it to the superintendent within the given time.

Time: 20 Min

SECTION -A

Marks: 15

Q.No.1: You have four choices for each objective type question as (A), (B), (C) and (D). The choice which you think is correct fill that circle in front of the question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

- i. The simplified form of $(\frac{a^2}{b^3})^3$ is _____.
- (A) $\frac{a^6}{b^9}$ (B) $\frac{a^5}{b^6}$ (C) $\frac{a^5}{b^9}$ (D) $\frac{a^6}{b^6}$
- ii. If Λ is a square matrix and $\Lambda^t = -\Lambda$, then Λ is called _____ matrix.
- (A) Symmetric (B) Skew-symmetric (C) Scalar (D) Identity
- iii. Conjugate of $3 + \sqrt{5}$ is;
- (A) $3 - \sqrt{5}$ (B) $-3 - \sqrt{5}$ (C) $-3 + \sqrt{5}$ (D) $\frac{1}{3 + \sqrt{5}}$
- iv. $lx^2 + mx + n$ is a polynomial of degree;
- (A) One (B) Two (C) Zero (D) Three
- v. L.C.M of $(a^4 - b^4)$ and $(a^2 - b^2)$ is;
- (A) $a^2 + b^2$ (B) $a^2 - b^2$ (C) $a - b$ (D) $a + b$
- vi. The point $(-3, +4)$ is located in;
- (A) Ist quadrant (B) IInd quadrant (C) IIIrd quadrant (D) IVth quadrant
- vii. If the diagonals of quadrilateral divides the figure into four congruent triangles, then the quadrilateral is a;
- (A) Trapezium (B) Parallelogram (C) Rectangle (D) Square
- viii. Two sides of a right angle triangle are 3 cm and 4 cm. Length of its hypotenuse is _____.
- (A) 6 cm (B) 5 cm (C) 4 cm (D) 3 cm
- ix. $\sqrt[3]{81} =$ _____
- (A) 3 (B) 9 (C) 27 (D) 81
- x. $\log_{64} x = \frac{-5}{6}$, then $x =$ _____
- (A) $\frac{1}{32}$ (B) 64 (C) $\frac{1}{8}$ (D) 8
- xi. If $a+b = -1$ and $a-b = 3$; then $(a^2 - b^2) =$ _____
- (A) -1 (B) 3 (C) -3 (D) 2
- xii. $\frac{2+7}{y^2+3} + \frac{7y-7}{y^2+3} =$ _____
- (A) $\frac{8y-14}{y^2+3}$ (B) $\frac{7y}{y^2+3}$ (C) $\frac{y}{y^2+3}$ (D) $\frac{8y}{y^2+3}$
- xiii. The solution set $|-x| = 0$ is;
- (A) {1} (B) {-1} (C) {0} (D) {}
- xiv. In ΔABC , if $\angle A \cong \angle B$, then bisector of _____ divides the ΔABC into two congruent angles.
- (A) $\angle A$ (B) $\angle B$ (C) $\angle C$ (D) Any one of its angle
- xv. Perpendicular drawn from any vertex of a triangle to its opposite side is called _____

BN- IXXVII-I
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Time allowed: 2:40 Hrs

Marks : 60

SECTION- B & C

Note: Attempt section B & C accordingly.

SECTION -B

Marks: 36

Q.No 2. Attempt any NINE parts of the following. All parts carry equal marks.

- i. If $A = \begin{bmatrix} -2 & 3 \\ 2 & -1 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 1 \\ 2 & 4 \end{bmatrix}$, then show that $AB \neq BA$.
- ii. If $z_1 = \sqrt{2} - \sqrt{3}i$, $z_2 = 2\sqrt{2} + 3 + \sqrt{3}i$, then find (a) $z_1 + z_2$ (b) $z_1 - z_2$
- iii. Simplify $\frac{(23.60)(8.719)^3}{\sqrt{6.93}}$ with the help of logarithm.
- iv. Find the value of $ab+bc+ca$, when $a^2 + b^2 + c^2 = 56$ and $a+b+c = 12$.
- v. Find the product of $(\frac{3}{2}P + \frac{2}{3P})(\frac{9}{4}P^2 + \frac{4}{9P^2} - 1)$.
- vi. Factorize $x(x+1)(x+2)(x+3)+1$
- vii. Without performing division, find the value of "a", when $(2x^3 - ax^2 - 2ax + 3x + 2)$ is exactly divisible by $(x+1)$
- viii. Find the L.C.M of $(2x^3 - 5x^2 + 4)$ and $(x^3 - 16x + 24)$.
- ix. Simplify $\frac{a^3 - b^3}{a^4 - b^4} + \frac{a^2 + ab + b^2}{a^2 + b^2}$
- x. Find the solution sets of $|5x - 13| + 2 = 14$.
- xi. Draw the graph of the equation $x + 2y = 6$.
- xii. Find the value of $a^2 + b^2$ and ab when $a+b=11$ and $a-b=6$.

SECTION -C

Marks: 24

Note: Attempt any THREE of the following. All questions carry equal marks.

- Q.No 3. Show by means of distance formula, that the points A(-1,4), B(1,2), C(3,4) and D(1,6) form a square. Also verify that the diagonals have equal length.
- Q.No 4. Any point equidistant from the end points of a line segment is on the right bisector of it.
- Q.No 5. Show that the sum of the lengths of any two sides of a triangle is greater than the length of the third side.
- Q.No 6. Draw a quadrilateral ABCD, such that $m\overline{AB} = 3\text{cm}$ and $m\angle B = 60^\circ$, $m\angle A = 110^\circ$, $m\overline{BC} = 3.5\text{cm}$ and $m\overline{AD} = 4\text{cm}$. Construct a triangle equal in area to the quadrilateral ABCD.