Y-29

Serial No. Of the Answer Book
Roll No. (in figure)_____
(in Words)_____

Superintendent Seal & Signature | FIC. No (For office use only)

901601
MATHEMATICS (Fresh) - 9th

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Total Time: 3 Hours **Max: Marks: 75**

Note: **There are THREE Sections of this Paper i.e. A,B and C, attempt each according to the given instructions.**

Time: 20 Minutes **SECTION-A** **Marks: 15**

Note: Attempt all parts of Section – A. Section –A must be return to the superintendent after 20 minutes even if you have not attempted any question. Overwriting/ defacing/Cutting etc is prohibited in Section-A and no credit will be given to such answer.

I. Write the correct option i.e. A/B/C/D in the empty boxes.

i. If $A = \begin{bmatrix} 1 & 3 \\ 2 & -2 \end{bmatrix}$, then A^{-1} = _____. [A]

(A) $-\frac{1}{8}\begin{bmatrix} -2 & -3 \\ -2 & 1 \end{bmatrix}$ (B) $-\frac{1}{8}\begin{bmatrix} -1 & -3 \\ -2 & 2 \end{bmatrix}$ (C) $\frac{1}{8}\begin{bmatrix} -2 & -3 \\ -2 & 1 \end{bmatrix}$ (D) $\frac{1}{8}\begin{bmatrix} -2 & -3 \\ 2 & 1 \end{bmatrix}$

ii. The multiplicative inverse of $\sqrt{3}$ is _____ [B]

(A) $-\sqrt{3}$ (B) $\frac{1}{\sqrt{3}}$ (C) $\sqrt{-3}$ (D) $\frac{-1}{\sqrt{3}}$

iii. $\sqrt{i} \times \sqrt{i}$ = _____ [C]

(A) $\sqrt{i}$ (B) $-i$ (C) 1 (D) $\sqrt{-1}$

iv. Characteristic of $\log(3250)$ is _____ [D]

(A) 1 (B) –1 (C) 2 (D) 3

v. $\log_n^m = y$, then m = _____ [A]

(A) m^y (B) $m \times y$ (C) y^m (D) $\frac{y}{m}$

vi. Expression of the form $\frac{P(x)}{Q(x)}$ $(Q(x) \neq 0 \text{ or } 1)$ is a _____ [A]

(A). Rational algebric expression (B) Binomial expression
(C) Rational expression (D) None of these

vii. Conjugate of $(3 - \sqrt{5})$ is _____ [A]

(A) $(3 + \sqrt{5})$ (B) $(-3 - \sqrt{5})$ (C) $(3 + \sqrt{5})$ (D) $(-3 + \sqrt{5})$

viii. Factors of $x^2 + 2x - 24$ are _____ [B]

(A) $(x + 4), (x - 6)$ (B) $(x - 4), (x + 6)$ (C) $(x + 3), (x - 8)$ (D) $(x + 8), (x - 3)$

ix. *L.C.M. of* $(a^2 - a + 1)$ *and* $(a^3 + 1)$ *is* . _____ [A]

(A) $(a^3 + 1)$ (B) $(a^2 - a + 1)$ (C) $(a^2 + a + 1)$ (D) $(a + 1)$

x. Simplified form of $\left(\frac{1}{a+b} + \frac{b}{a^2 - b^2}\right)$ is _____ [A]

(A) $\frac{a}{a^2-b^2}$ (B) $\frac{b}{a^2-b^2}$ (C) $\frac{ab}{a^2-b^2}$ (D) $\frac{a+b}{a^2-b^2}$

xi. *The solution set of* $\sqrt{x} = -10$ is _____ [B]

(A) {10} (B) {100} (C) {−100} (D) {−10}

xii. The two coordinate axis intersect at an angle of [D]

(A) 60° (B) 30° (C) 45° (D) 90°

xiii. $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$ is called _____ [A]

(A) Mid Point formula (B) Distance formula
(C) Ratio formula (D) Division formula

xiv. How many right angles can be there in a triangle? _____ [C]

(A) At least one (B)two (C) At most one (D) very from triangle to triangle

xv. _____ sides of a parallelogram are congruent [B]

(A) All angles (B) Opposite sides (C) All sides (D) Adjacent sides

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Note: Time allowed for section B and C is 2 hours and 40 minutes.

SECTION "B"

Marks: 36

II. Attempt any NINE Parts out of the following. Each Part carries equal marks.

i. If $A=\begin{bmatrix} 2 & 5 \\ -3 & 4 \end{bmatrix}$, then compute A^{-1}

ii. If $A=\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B=\begin{bmatrix} -1 & 1 \\ 2 & 3 \end{bmatrix}$, then show that $(A+B)^t = A^t + B^t$,

iii. Simplify $(28.65)^{1/4}$ with the help of logarithms.

iv. *Simplify* $\dfrac{(ab)^{1/a}}{\left(\frac{1}{ab}\right)^{1/b}}$.

v. Find the quotient $\left(\dfrac{Z_1}{Z_2}\right)$, where $Z_1 = 7+6i$, $Z_2 = 9-i$

vi. Prove that $a^3+b^3=(a+b)(a^2-ab+b^2)$.

vii. Factorize x^8+x^4+1

viii. For what value of "a" $(2x^3 - ax^2 - 2ax + 3x + 2)$ is exactly divisible by $(x+1)$.

ix. Find the L. C. M of (x^2+3x+2) *and* (x^2+5x+6) by factorization method.

x. Simplify $\left(\dfrac{x}{x+y}+\dfrac{2y}{x+y}\right)$.

xi. Solve the radical equation $\dfrac{\sqrt{3x+4}+7}{6}=2$

xii. Draw the graph of $2x-y=6$.

SECTION "C"

Marks:24

Note: Attempt any THREE questions of the following. Each question carries equal Marks.

III. Show that the points (3, 2), (4, 1), (5, 4) and (6, 3) are the vertices of a parallelogram.

IV. If two opposite sides of a quadrilateral are congruent and parallel, it is a parallelogram.

V. Any point on the right bisector of a line segment is equidistant from its end point.

VI. Construct a ΔLMN, where m $\overline{LM}$ = 6cm, $m<L=75^0$ and m < M = 45^0