Roll No(figures)_____

(In words) _____

ESKP-09XVI01

MATHEMATICS

9th (New Course)

Superintendent Signature

P-148 P 50

Time: 3 hours

Marks: **75**

Note: There are three sections in the paper i.e. A,B&C. Attempt Section-A and return it to the Superintendent within the given time. No mark will be awarded to cutting, erasing & overwriting. Mobile phones are strictly prohibited.

Time: 20 mints	SECTION-A	Marks: 15

QNo1: Select the correct option and insert (A,B,C,D) in the relevant box.

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

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) $\frac{1}{8}\begin{bmatrix} -2 & 3 \\ 2 & 1 \end{bmatrix}$

a

ii. $\sqrt{i} \times \sqrt{i} =$ _____

a) i b) $-i$ c) 1   d) -1

a

iii. The matrix $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ is _____

a) Identify matrix w.r.t addition   b) Row matrix   c) Column matrix   d) Diagonal matrix

a

iv. The multiplicative inverse of $\sqrt{2}$ is

a) $-\sqrt{2}$ b) $\frac{1}{\sqrt{2}}$ c) $\sqrt{-2}$ d) $\frac{-1}{\sqrt{2}}$

b

v. $P(x) = 1$ is a _____

a) Polynomial of degree one   b) Binomial   c) Polynomial of zero degree   d) None of these

c

vi. If $\log_a^m = x$, then m = _____

a) a^x b) x^a c) $a \times x$ d) $\frac{a}{x}$

a

vii. Characteristic of log (3250) is _____

a) 1   b) -1   c) 3   d) 2

c

viii. $(a^3 - b^3) =$ _____

a) $(a - b)^3 - 3ab$ b) $(a - b)(a^2 + ab + b^2)$ c) $(a - b)(a^2 - ab + b^2)$ d) $(a - b)^3 + ab$

b

ix. Factors of $x^2 + x - 6$ are _____

a) (x-2), (x-3)   b) (x-2), (x+3)   c) (x+2), (x-3)   d) (x+2), (x+3)

b

x. H.C.F of $(a^3 - b^3)$ and $(a^2 + ab + b^2)$ is _____

a) $(a + b)$ b) $a^2 + ab + b^2$ c) $(a^2 - ab + b^2)$ d) $(a - b)$

b

xi. The solution set of $| -x | = 0$ is _____

a) {1}   b) {0}   c) {-1}   d) { }

b

xii. The solution set of x = 1 and x = 2 is _____

a) {(02)}   b) {(1,2)}   c) {(2,0)}   d) { }

d

xiii. In right angle triangle, one angle is _____

a) 270°   b) 360°   c) 90°   d) 180°

c

xiv. How many obtuse angles can be there in a triangle?

a) at least one   b) at most one   c) two   d) vary from triangle to triangle

b

xv. _____ sides of a parallelogram are congruent.

a) All sides   b) Opposite sides   c) Adjacent sides   d) None of these

b

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Note: Time allowed for Section – B & C is 2:40 hours.

<div align="center">SECTION – B</div>   Marks: 36

Q2: **Attempt any NINE parts. Each part caries Four marks.**

1) Solve the system of equations $5x + 7y = 3$ and $3x + y = 5$ by using Cramer's Rule.

2) Show that $(A + B)' = A' + B'$, where $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 1 \\ 2 & 3 \end{bmatrix}$

3) Simplify $\left[\dfrac{(a+b)^2 \cdot (c+d)^3}{(a+b)(c+d)^2} \right]^3$

4) Simplify $\dfrac{(542)\, 3\sqrt{383}}{32.72}$ with the help of logarithm.

5) Find the value of $ab + bc + ca$, when $a+b+c = 12$ and $a^2 + b^2 + c^2 = 38$.

6) If $x = \sqrt{5} - 1$, then find the value of $\left(x - \dfrac{1}{x} \right)$ and $\left(x^2 + \dfrac{1}{x^2} \right)$

7) Factorize $(2x^3 - 128)$.

8) For what value of "b", $(x^3 - 4x^3 + bx - 2)$ is exactly divisible by $(x - 1)$.

9) Find the HCF of $(3x^3 - 2x^2 - 3x + 2)$ and $(6x^3 - 7x^3 - x + 2)$ by divisible method.

10) Simplify: $\dfrac{(a^3 - b^3)}{(a^4 - b^4)} \div \dfrac{(a^2 + ab + b^2)}{(a^2 + b^2)}$

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

12) Draw the graph of the equation $y = x + 2$.

<div align="center">SECTION – C</div>   Marks: 24

Note: Attempt any THREE questions. Each question carries equal marks.

Q3: By using distance formula, show that the points $A(-3, -4)$, $B(2, 6)$ and $C(0, 2)$ are collinear.

Q4: If two angles of a triangle are congruent, then the opposite sides to them are also congruent.

Q5: The line segment, joining the mid-points of two sides of a triangle, is parallel to the third side and is equal to one half of its length.

Q6: Construct a $\triangle ABC$, where $m\overline{AB} = 5cm$, $m\angle A = 45^\circ$ and $m\angle C = 60^\circ$

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