

Sig. of Supdt.

KT-IX-13(A)  
**MATHEMATICS - (9th)**  
 (Fresh / New Course)

Roll No.

Fig. No.....

Fig. No.....

**Time Allowed : 3 Hrs.**

**Total Marks : 75**

**Note:** There are three sections of this paper, A, B, & C. Carefully read the instructions for each section and attempt accordingly. Attempt all questions of Section – (A) and return it to the superintendent within the given time.

**Time Allowed : 20 Mins.**

**SECTION – A**

**Total Marks : 15**

**Note:** Use this sheet for this section. No. mark will be awarded for cutting, erasing or over writing.

**Q. 1** Insert the correct option (a, b, c, d) in the empty box opposite to each part. Each part carries one mark. Any kind of Mark Left / Written is strictly prohibited. Mobile Phone is strictly prohibited in Examination Hall.

- |       |  |   |
|-------|--|---|
| i)    | If $A = \begin{bmatrix} 7 & 8 \\ 3 & 2 \end{bmatrix}$ then what will be the value of Adj. A?   | <input style="width: 40px; height: 30px;" type="text"/> |
|       | (a) $\begin{bmatrix} 2 & 8 \\ -3 & 7 \end{bmatrix}$ (b) $\begin{bmatrix} 7 & -8 \\ -3 & 2 \end{bmatrix}$ (c) $\begin{bmatrix} 2 & -8 \\ -3 & 7 \end{bmatrix}$ (d) $\begin{bmatrix} 7 & 3 \\ 8 & 2 \end{bmatrix}$ |   |
| ii)   | If $2.(3+4) = 2.3 + 2.4$ what will be the name of property used have?  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) Commutative      (b) Associative      (c) Distributive      (d) Closure  |   |
| iii)  | Which one is the base in common logarithm?   | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) e      (b) 10      (c) 15      (d) $\pi$   |   |
| iv)   | If $P(x)=1$ than what will be the name of polynomial?  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) Polynomial of Degree 1      (b) Polynomial of zero degree<br>(c) Binomial      (d) None of these   |   |
| v)    | What are the factors of $a^3 + b^3$ ?  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) $(a-b)(a^2 + ab + b^2)$ (b) $(a+b)(a^2 + ab + b^2)$<br>(c) $(a+b)(a^2 + ab - b^2)$ (d) $(a+b)(a^2 - ab + b^2)$   |   |
| vi)   | Which one is the LCM of $(a-b)^4$ and $(a-b)^3$ ?  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) $(a-b)$ (b) $(a-b)^3$ (c) $(a-b)^4$ (d) $(a-b)^7$  |   |
| vii)  | Which one is the solution set of $\sqrt{x+2} = 5$ ?  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) 23      (b) 3      (c) 27      (d) -23   |   |
| viii) | Where will be lied then the point (4, 0)?  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) Quadrant II      (b) y-axis      (c) Quadrant III      (d) x-axis  |   |
| ix)   | Which one inter distance between the points A(5,-2) and B(1,2)?  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) 6      (b) 4      (c) $4\sqrt{2}$ (d) -6   |   |
| x)    | In $\triangle ABC$ , if $\angle A \sim \angle B$ , then the bisector of which angle divides $\triangle ABC$ into two congruent triangle?   | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) $\angle C$ (b) $\angle B$ (c) $\angle A$ (d) Any angle   |   |
| xi)   | In any right angled triangle which one is the longest side of a triangle?  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) Perpendicular      (b) Base      (c) Hypotenuse      (d) Median  |   |
| xii)  | If three sides of one triangle are congruent to the corresponding there sides of the other, than the triangles will be .....   | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) Congruent      (b) Equal      (c) Unequal      (d) None of these   |   |
| xiii) | Perpendicular of bisectors of a triangle are .....   | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) Congruent      (b) Concurrent      (c) Parallel to each other      (d) None of these   |   |
| xiv)  | $\triangle ABC$ and $\triangle DEF$ have equal bases and altitudes than triangles are .....  | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) Equal in area      (b) Congruent      (c) Similar      (d) None of these   |   |
| xv)   | How many are elements of triangle?   | <input style="width: 40px; height: 20px;" type="text"/> |
|       | (a) 3      (b) 4      (c) 5      (d) 6   |   |

KT-IX-13(A)  
**MATHEMATICS - (9th)**  
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**Section – B & C**

Total Marks : 60

Time Allowed : 2:40 Hrs.

**Section – B**

Marks : 36

**Q. 2 Write a short answer of any NINE of the following parts. Each part carries equal marks.**

- (i) If  $A = \begin{bmatrix} 0 & -1 \\ 2 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} 2 & 3 \\ 1 & 0 \end{bmatrix}$  then prove that  $(AB)^{-1} = B^{-1}A^{-1}$
- (ii) Simplify  $\frac{2^{p+1} \cdot 3^{2p-q} \cdot 5^{p+q} \cdot 6^q}{6^p \cdot 10^{q+2} \cdot 15^p}$
- (iii) Simplify with the help of logarithm (238.2) (9.506)
- (iv) Find the value of  $a^2 + b^2 + c^2$  when  $a + b + c = 6$  and  $ab + bc + ca = 11$
- (v) If  $x = \sqrt{10} + 3$  then find the value of  $x - \frac{1}{x}$  and  $x^2 + \frac{1}{x^2}$ .
- (vi) Find the HCF by division  $x^3 - x^2 - 10x - 8$  and  $x^3 - 2x^2 - 13x - 10$
- (vii) Factorize  $ab^3 + 2b^2 - ab - 2$
- (viii) For what value of K the expansion  $4x^4 + 32x^2 + 96 + \frac{128}{x^2} + \frac{K}{x^4}$  will become a perfect square?
- (ix) Simplify  $\frac{1}{x+y} + \frac{y}{x^2-y^2} + \frac{x}{x^2+y^2}$
- (x) Find the solution set by graphical method.  $x + 4y = 5$ ,  $2x + 3y = 0$
- (xi) Find the LCM by factorization  $x^2 - 4x + 4$  and  $x^2 - 4x$ .
- (xii) If breadth of a room is one fourth of its length and perimeter of the room is 20m. Find length and breadth of the room.

**Section – C**

Marks : 24

**NOTE : Attempt any three questions. Each question carries equal marks.**

- Q. 3 Find the coordinates of the mid-point of the segment joining the points A(3, 4) and B(1, 2).
- Q. 4 Prove that the right bisectors of the sides of a triangle are concurrent.
- Q. 5 Prove that any point inside an angle, equidistant from its arms, is on its bisector.
- Q. 6 Construct  $\triangle DEF$  and draw their medians, when  $\overline{mFD} = 6\text{cm}$ ,  $m\angle E = 60^\circ$  and  $m\angle F = 75^\circ$