9181

P-304

MATHEMATICS — 9th

NOTE: Attempt all questions of Section-A by filling the corresponding bubble on the MCQ ANSWER SHEET and return it to the Superintendent within given time, even if you have not attempted any question.

SECTION-A

Time: 20 Minutes **Marks:** 15

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1. The matrix $\begin{bmatrix} -1 & 0 \\ 0 & -2 \end{bmatrix}$ is ..... matrix. A) diagonal, B) scalar, C) identity, D) null

2. If A is a square matrix then $A = A^t$ is called ..... matrix. A) skew symmetric, B) symmetric, C) diagonal, D) identity

3. If $2(3+4) = 2\cdot3 + 2\cdot4$ then the property used is ..... A) commutative, B) associative, C) distributive, D) closure

4. If $\log x = 3$ then $x =$ ..... A) 200, B) 1000, C) 100, D) $\frac{2}{10}$

5. $(a+b)^2 - (a-b)^2 =$ ..... A) $4ab$, B) $2(a^2+b^2)$, C) $a^2 - 4ab + 2b^2$, D) $2a+2b$

6. In simplified form $\frac{1}{a+b} + \frac{b}{a^2-b^2} =$ ..... A) $\frac{b+1}{a^2-b^2}$, B) $\frac{a}{a^2-b^2}$, C) $\frac{b}{a^2-b^2}$, D) $\frac{b+a}{a^2-b^2}$

7. LCM = ... A) $\frac{HCF}{A \times B}$, B) $\frac{A \times B}{HCF}$, C) $\frac{A}{HCF}$, D) $\frac{B}{HCF}$

8. The solution set of $5 - 3x = -4 =$ ..... A) $\{-3\}$, B) $\{1,3\}$, C) $\{3\}$, D) $\{9\}$

9. The two coordinate axes intersect at an angle of ..... A) 30°, B) 60°, C) 90°, D) 45°

10. Let $p_1(2,0)$ and $p_2(0,2)$ are any two points in a plane then $|p_1p_2| =$ .....
A) 4, B) $\sqrt{2}$, C) $2\sqrt{2}$, D) 0

11. How many obtuse angles can be there in a triangle? A) at least 1, B) at the most 1, C) two, D) vary from triangle to triangle

12. Perpendicular bisectors of a triangle are ..... A) congruent, B) concurrent, C) parallel to each other, D) none of these

13. Diagonal of a rectangle measures 6.5cm. If width is 2.5cm, its length is .....
A) 4 cm, B) 9 cm, C) 6 cm, D) 3 cm

14. Perpendicular from a vertex of a triangle to its opposite side is called .....
A) median, B) perpendicular bisector, C) altitude, D) angle bisector

15. The point of intersection of the ..... of a triangle divides them in the ratio 2 : 1.
A) angle bisectors, B) perpendicular bisectors, C) medians, D) altitudes

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MATHEMATICS — 9th

Time: 2 Hours 40 Minutes

SECTION-B

Marks: 36

1. Attempt any nine of the following. All carry equal marks.

   i. If $C=\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ show that $(C^t)^t=C$

   ii. Solve the following system of linear equations using Cramer's rule: $x-2y=5,\ 2x-y=6$

   iii. Find the quotient $\frac{Z_1}{Z_2}$ where $Z_1=3-4i,\ Z_2=4+5i$

   iv. Simplify with the help of logarithm $(28.65)^{\frac{1}{4}}$

   v. If $x=\sqrt{10}+3$ find the values of $x-\frac{1}{x}$ and $x^2+\frac{1}{x^2}$

   vi. Factorize a^2-b^2+2b-1

   vii. Factorize $81x^4+\frac{1}{81x^4}-14$

   viii. If product of two polynomials is $x^4+6x^3-3x^2-56x-48$ and their LCM is $x^3+2x^2-11x-12$. Find their HCF.

   ix. For what value of k the expression $4x^4+32x^2+96+\frac{128}{x^2}+\frac{k}{x^4}$ will become a perfect square?

   x. Find the solution set of $|3x-5|+7=11$

   xi. Graph the equation $x+2y=6$

   xii. Simplify $\frac{2x}{3x-12}\div\frac{x^2-2x}{x^2-6x+8}$

SECTION-C

Marks: 24

NOTE: Attempt any three of the following questions. All questions carry equal marks.

2. Show that the points A(3,2), B(9,10) and C(1,16) are the vertices of an isosceles triangle.

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

4. Prove that any point on the right bisector of a line segment is equidistant from its end points.

5. Construct ΔKLM such that $m\overline{KL}=m\overline{KM}=5.1cm$ and $m\angle K=65^\circ$