

ESKPIX-XXVI (I)
SSC-(P-I)
MATHEMATICS – 9th

Time: 2 Hours 40 Minutes

SECTION "B"

Marks: 36

Q.2. Attempt any NINE (09) Parts of the following. All parts carry equal marks.

- i. Solve the system of equations $2x + y = 10$ and $3x + 2y = 0$ using Cramer's Rule. 1+2+1
- ii. Simplify $\frac{\sqrt{144x^8y^4}}{\sqrt[3]{27x^6y^3}}$ 1+1+2
- iii. Find the value of x from the equation $\log x = 1.7421$ 2+2
- iv. Simplify the rational expression $\frac{x}{3x-6} \cdot \frac{3x+6}{2x^3-32x}$ 1+2+1
- v. If $x = \sqrt{6} - \sqrt{5}$, find the value of $x + \frac{1}{x}$ and $x^2 + \frac{1}{x^2}$ 2+2
- vi. If $x + 2$ is a factor of $2x^2 + kx - 9$ find the value of k . 1+2+1
- vii. Find LCM of the polynomials $x^3 - 4x^2 - x + 4$ and $x^3 - x^2 - 4x + 4$ 2+2
- viii. Solve the radical equation $2\sqrt{3x-1} = \sqrt{2x+1}$ 1+2+1
- ix. Solve the inequality $\frac{x}{3} + 2 \geq \frac{x-1}{2}$ and plot the solution on number line. 2+1+1
- x. Prove that the points $A(1,2)$, $B(5,3)$ and $C(2,6)$ are the vertices of a scalene triangle. 1+2+1
- xi. Prove that, in any correspondence of two right-angled triangles, the hypotenuse and one side of one triangle are congruent to the hypotenuse and the corresponding side of the other, then triangles are congruent. 1+2+1
- xii. Prove that, the medians of a triangle are congruent and their point of concurrency is the point of trisection of each median. 1+2+1

SECTION "C"

Marks: 24

Note: Attempt any FOUR (04) questions. All questions carry equal marks.

- Q.3. Prove that, Any point equidistance from the points of a line segment is equidistance from its end points. 1+1+2+2
- Q.4. Prove that, if two angles of a triangle are unequal in measure, the side opposite the greater angle is longer than the side opposite to the smaller angle. 1+1+2+2
- Q.5. Prove that, the internal bisector of an angle of a triangle divides the side opposite to it in the ratio of the lengths of the sides containing the angles. 1+1+2+2
- Q.6. Prove that, in a right-angled triangle, the square of the length of hypotenuse is equal to the sum of the squares of the lengths of the other two sides. 1+1+2+2
- Q.7. Prove that, parallelogram on the same base and lying between the same parallel lines (or of the same altitude) are equal in area. 1+1+2+2
- Q.8. Construct a quadrilateral PQRS such that $mPQ = 6cm$,
 $mQR = 7cm$, $m\angle P = 110^\circ$
 $m\angle Q = 60^\circ$, $m\angle R = 105^\circ$ 1+1+2+2