

ESKPX-XXVI (I)
SSC-(P-II)
MATHEMATICS – 10th

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 $9^{2x} - 12 \cdot 3^x + 27 = 0$ using quadratic formula. 1+2+1
- ii. Solve the equation: $\sqrt{2x+3} = 5 - \sqrt{x+2}$ 1+1+2
- iii. Find the quadratic equation whose roots are $\frac{1}{2}$ and 3. 2+2
- iv. Find the value of k so that the sum of the roots of the quadratic equation $x^2 - 4kx + k + 3 = 0$ is equal to twice the product of its roots. 1+1+2
- v. Solve the equation: $\frac{\sqrt{5x+1} + \sqrt{2x}}{\sqrt{5x+1} - \sqrt{2x}} = \frac{4}{2}$ 1+2+1
- vi. Resolve $\frac{5x-2}{(x-2)(x+4)}$ into partial fractions. 1+2+1
- vii. If $X = \{1, 2, 3, 4\}$ & $Y = \{a, b, c, d\}$ then write: 2+2
- i. a one-one function from X to Y
- ii. bijective function from Y to X
- viii. Find the Standard Deviation for the data: 5, 10, 15, 20, 25 1+2+1
- ix. Find the area of sector of a circle whose radius is 8m, with central angle 60° . 1+2+1
- x. Prove that: $\frac{1+\cos x}{\sin x} + \frac{\sin x}{1+\cos x} = 2\operatorname{cosec} x$ 1+2+1
- xi. If two circles with radii $3x$ cm and 5 cm respectively touch each other externally, find the value of x if the distance between their centers is 17 cm. 1+2+1
- xii. Prove that if two arcs of a circle are congruent then the corresponding chords are equal. 1+2+1

SECTION "C"

Marks: 24

Note: Attempt any THREE (03) questions. All questions carry equal marks.

- Q.3.** Using Apollonius' theorem, find the length of the medians of the triangle, having length of their sides are AB=5cm, BC=12cm and AC=13cm. 1+3+3+1
- Q.4.** In a circle with center O, the perpendicular distances of chords PQ and RS from the center are each 5cm. If the length of chord $PQ = (2x + 3)$ cm and the length of chord $RS = (x + 9)$ cm, find the value of x and explain with help of figure. 1+1+4+2
- Q.5.** Prove that any two angles in the same segment of a circle are equal. 1+1+4+2
- Q.6.** Inscribe a circle in a triangle ABC whose sides are 4cm, 6cm and 8cm. 1+4+2+1