

Note: Time allowed for section B and C is 2 hours and 40 minutes.

SECTION "B"

Marks: 36

II. Attempt any NINE Parts out of the following. Each Part carries equal marks.

i. Solve $2x + \frac{4}{x} = 9$.

ii. Prove that $(-1 + \sqrt{3})^4 (-1 - \sqrt{3})^5 = 512w^2$.

iii. The sum of two numbers is 11 and sum of their square is 65. Find the numbers.

iv. If $3x-1$, 4 , 35 are in continued proportion, find the value of x .

v. If $a : b = c : d$ then prove that $\frac{2a+3b}{2a-3b} = \frac{2c+3d}{2c-3d}$.

vi. Resolve $\frac{1}{(x+1)(x+2)}$ into partial fractions.

vii. Verify associative property of intersection for the following sets.

$$A = \{1, 2, 3, \dots, 100\} \quad B = \{2, 4, 6, \dots, 100\} \quad C = \{1, 3, 5, \dots, 99\}$$

viii. If $x = \{1, 2, 3, 4\}$, $y = \{5, 6, 7, 8\}$ then write a function which is onto from y to x .

ix. What is the range of the data 205, 260, 270, 311, 311?

x. Find the area of sector of a circle whose radius is 4m, with central angle 12 radian.

xi. Prove that $\frac{\sin x}{1 + \cos x} + \frac{1 + \cos x}{\sin x} = 2 \operatorname{Cosec} x$.

xii. A building that is 21 meters tall casts a shadow 25 meters long. Find the angle of elevation of the sun to the nearest degree.

SECTION "C"

Marks: 24

Note: Attempt any THREE questions of the following. Each question carries equal Marks.

III. Prove that: One and only one circle can pass through three non-collinear points.

IV. The two tangents drawn to a circle from a point outside it, are equal in length.

V. If two chords of a circle are equal, then their corresponding arcs are congruent.

VI. Draw a square of 6cm. Circumscribe a circle about that square and then inscribe a circle in the same square.