

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

SECTION "B"

Marks: 30

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

i. Solve for x.  $\frac{x-1}{x+3} + \frac{x+3}{x-1} = \frac{13}{6}$

ii. Solve for x.  $\sqrt{x} + \sqrt{3x+1} = \sqrt{5x+1}$

iii. Find the value of K. If the sum of roots of  $2x^2 + Kx + 6$  is equal to the product of its roots.

iv. Show that  $x^3 - y^3 = (x - y)(x - \omega y)(x - \omega^2 y)$ .

v. There is direct variation between  $x^2$  and  $y$ . When  $x = 7$ ,  $y = 49$  find  $y$  when  $x = 9$

vi. Find the Mean proportional of 12, 3.

vii. Resolve into Partial fractions  $\frac{1}{x(x^2+1)}$

viii. If  $A = \{1, 2, 3, \dots, 12\}$  and  $B = \{2, 4, 6, \dots, 12\}$  verify commutative property of union and intersection.

ix. Domain of a binary relation  $R = \{(x, y) \mid y = 2x\}$  is the set of  $\{0, 4, 8\}$ . Find Range of R.

x. Find the standard Deviation for the following Data 6, 8, 10, 12, 14.

xi. Find  $l$  when  $\theta = \frac{\pi}{6}$  radian,  $r = 2$  cm.

xii. Prove that  $(\sec^2 \theta - 1) \cos^2 \theta = \sin^2 \theta$ .

SECTION "C"

Marks: 24

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

III. Perpendicular from the centre of a circle on a chord bisect it.

IV. Prove that, two tangents drawn from a point outside a circle are equal in length.

V. Prove that, The angle in a Semi circle is a right angle.

VI. Construct a Triangle with sides 2 cm, 2.5 cm and 3 cm. Also draw its Circum circle.