

Section-B

Note: Solve any EIGHT of the following questions. Each question carries 04 marks

- Q.2 Verify the commutative property of union for the set:
 $A = \{a, b, c, d, e\}$ and $B = \{a, e, o, u\}$
- Q.3 Find the value of "a" if the ratios $3a + 4 : 2a + 5$ and $4:3$ are equal,
- Q.4 Prove that $a:b=c:d$ if $a^2 - b^2 : a^2 + b^2 = ac : bd$
- Q.5 For what values of p and q the roots of quadratic equation $x^2 + (2p - 4)x - (3q + 5) = 0$
- Q.6 Solve the systems of equation, $2x + y = 3$ and $x + y^2 = 2$
- Q.7 Show that the diameters of a circle bisect each other.
- Q.8 Find the values of x and y if $(x - 5, 10) = (11, -7)$
- Q.9 For what value of x, the matrix $\begin{bmatrix} 5 - x & x + 1 \\ 2 & 4 \end{bmatrix}$ is singular?
- Q.10 Find all the cube roots of 64.
- Q.11 If $A = \{1, 2\}$, $B = \{2, 3\}$ and $C = \{1, 3, 5\}$, then find (i) $A \times B$ (ii) $A \times (B \cup C)$
- Q.12 Find the value of m, if the roots of the equation $x^2 - 5x + 2m = 0$ differ by 1.
- Q.13 How far from centre of the radius 3 cm, a tangent segment of length 10 cm can be drawn?

SECTION-C

NOTE: Solve any FOUR of the following questions. Each question carries 07 marks.

- Q.14 Verify De Morgan's Laws using Venn diagram if $A = \{1, 3, 5, 7, 9\}$, $B = \{5, 6, 7, 8\}$ and $U = \{1, 2, 3, \dots, 10\}$
- Q.15 Find the solution by matrix inversion method rule $2x + y = 14$
 $-4x + y = 28$
- Q.16 Show that $(1 - \omega)(1 + \omega^2)(1 + \omega^4)(1 + \omega^8) = (\omega + \omega^2)^4$
- Q.17 The length of sides of triangle, $a=16$, $b=30$ and $c=34$, verify that the triangle is right triangle.
- Q.18 Resolve $\frac{6x - 5}{(x^2 + 10)(x + 1)}$ into partial fractions.
- Q.19 Prove that, if a line is drawn perpendicular to a radial segment of a circle at its outer end point, it is tangent to the circle at that point.