

Seat No: _____

Enrollment No: _____

PARUL UNIVERSITY
FACULTY OF IT & COMPUTER SCIENCE
Parul Institute of Computer Application
Bachelor of Computer Application
2018-19 Mid Semester Examination

Semester: I
Subject Code: 05191101
Subject Name: Basic Mathematics

Date: 10/09/2018
Time: 10:00AM to 12:00PM
Total Marks: 40

Instructions:

1. Figures to the right indicate full marks.
2. Make suitable assumptions wherever necessary.

~~Q.1~~ Answer the following

Q.1 Answer the following.

[10]

(a) (i) If $A = \begin{bmatrix} -2 & 5 \\ -6 & 7 \end{bmatrix}$, then find $\text{Adj}(A)$

[3]

(ii) Find slope of line joining $A(3,7)$ and $B(4,5)$.

(iii) If $A = \{1,2\}$, $B = \{4,5\}$, $C = \{5,4\}$, then $(A \cap B \cap C)$

(b) (i) If $A = \begin{bmatrix} 1 & 2 \\ 6 & 7 \end{bmatrix}$, then find $|A|$

[7]

(ii) If $B = \{x/x \in \mathbb{N}, x \leq 4\}$, $C = \{x/x \in \mathbb{N}, x < 8\}$, then $(B \cap C)$

(iii) Find distance between point $A(3,5)$ and $B(1,6)$

(iv) If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 4 \\ 2 & 5 \\ 3 & 6 \end{bmatrix}$, then $A \times B = \begin{bmatrix} 3 & 5 \\ 6 & 7 \end{bmatrix}$, true or false?

(v) If $A = \{2,3,6\}$ and $B = \{3,4,5\}$ then $\{(2,3), (3,4), (6,5), (5,6)\}$ are elements of $A \times B$, true or false, justify your answer.

(vi) Y-Intercept of $y = 2x - 3 =$ -----

(vii) From $\frac{x}{2} + \frac{y}{3} = 1$, X-Intercept =-----

Q.2 Answer the following.

[10]

(a) (i) If $A = \begin{bmatrix} -4 & 6 \\ 2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} -3 & -2 \\ 1 & -4 \end{bmatrix}$, then value of $A \times B$

[4]

(ii) If $U = \{x/x \in \mathbb{N}, 1 \leq x \leq 10\}$, $A = \{x/x \in \mathbb{N}, 2 < x < 5\}$, $B = \{x/x \in \mathbb{N}, 5 < x < 10\}$, then $(A \cup B)'$

(b) (i) Prove that $(-2,-2)$, $(-1,2)$ and $(3,1)$ are vertices of isosceles triangle.

[6]

(ii) If $U = \{x/x \in \mathbb{N}, x \leq 10\}$, $A = \{x/x \in \mathbb{N}, x^2 < 10\}$, $B = \{2,4,6\}$, $C = \{0,4,-1\}$ then verify

$A \cap (B - C) = (A \cap B) - (A \cap C)$

Q.3 Attempt any TWO.

[10]

1 Find A^{-1} for $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$ by matrix method.

[5]

2 If $A = \{2,3,4\}$, $B = \{1,3,4\}$, $S = \{1,2,3\}$ and $T = \{1,3,5\}$ verify $(A \times B) \cap (S \times T) = (A \cap S) \times (B \cap T)$

[5]

3 Obtain equation of line with slope 2 and passing from point of intersection of lines

[5]

$$2x + 3y + 4 = 0 \text{ and } 3x + 6y - 8 = 0.$$

Q.4 Answer the following.

[10]

(a) Solve system by Cramer's rule

[5]

$$x + 2y - z = 5, 3x - y + 2z = 9, 5x + 3y + 4z = 15$$

(b) Find equation of line perpendicular to $4x - 3y + 2 = 0$ and passing through point of intersection of $5x + 2y - 11 = 0$ and $3x - y + 11 = 0$

[5]

OR

(b) Solve $5x - 6y + 4z = 15, 7x + 4y - 3z = 19, 2x + y + 6z = 46$, by matrix method.

[5]