(6) Seat No.:_____

SARDAR PATEL UNIVERSITY
B.B.A. (ITM) (4 Years) EXAMINATION
SEMESTER – I (NC)
Saturday, 18ᵗʰ March 2017
UM01CBBI07: BUSINESS MATHEMATICS

Time: - 2.00 p.m. to 4.00 p.m.   Total Marks: - 60

Q.1

(a) Define following terms with example: 05
   1. Intersection of two sets
   2. Subset

(b) State and Verify De 'Morgan laws for two sets A and B by taking   05
   $U = \{a,b,c,d,e,f,g,h,i\}$, $A = \{a,b,c,e,f\}$, $B = \{e,d,f,g\}$

(c) Express the inequality in a Modulus form: $-2 < x < 9$ 05

Q.1   **OR**

(a) Let $A = \{ x / -1 \prec x \prec 6, x \in Z \}$, $B = \{2,4,5\}$ and $C = \{1\}$ then   05
   (1) Compute : $B \times C$
   (2) Verify that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$.

(b) If A = set of the letters of the word 'WHAT', B = set of the letters of the word   05
   'HEAT' and C = set of the letters of the word 'EATA'.
   Then find $B \times (A - B)$ and $C \times C$.

(c) Express in the form of an interval: $|x - 3| < 5$ 05

Q.2

(a) Explain following terms with example: 05
   1. Transpose matrix
   2. Symmetric matrix

(b) If $A = \begin{bmatrix} 4 & -1 \\ -1 & 3 \\ 2 & 0 \end{bmatrix}, B = \begin{bmatrix} -2 & 5 \\ 3 & -1 \\ 5 & 2 \end{bmatrix}$ and $C = \begin{bmatrix} 2 & 4 \\ -1 & -5 \\ 3 & -2 \end{bmatrix}$,   05
   Then find   1. $A + C$ 2. $A + B + C$ 3. $2A - 3B + C$

(c) Solve the following equations by using Cramer's rule: 05
   $2x + y = 4,$ $5x + 3y = 9$

Q.2   **OR**

(a) Solve the following equations by Inverse of matrix: 05
   $2x + 3y = 10,$ $x + 6y = 4$

(b) If A = $\begin{bmatrix} 5 & 4 \\ 3 & 2 \end{bmatrix}$ Then find $A^2 - 3A + 14I$.   05

(P. T. O.)

(c) If $A = \begin{bmatrix} 1 & 1 & 3 \\ 2 & 3 & 1 \\ 3 & 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 1 & 2 \\ 2 & 4 & 1 \\ 1 & 2 & 2 \end{bmatrix}$, then find AB and BA.   05

Q.3

(a) Show that the equation of a line having slope m and Y-intercept c is $y = mx + c$.   05

(b) Find the equation of a line passing through the point $(-1, 4)$ and making equal intercepts on the co-ordinate axes.   05

(c) Find a, if the distance between $(a, -4)$ and $(-8,\ 2)$ is 10.   05

Q.3

OR

(a) Find the equation of a line which is Parallel to the line $2x - 3y - 5 = 0$ and passing through the point $(4, 5)$.   05

(b) Find the equation of a line whose slope is 3 and which passes through the intersection of the lines $x - 4y + 18 = 0$ and $x + y - 12 = 0$.   05

(c) Given $A(2,4), B(6,8)$ and $C(a + 4, 2a + 6)$ and $\overline{AC} \perp \overline{AB}$, Find a.   05

Q.4

(a) State working rules for limit.   03

(b) Evaluate following: 12

1. $\lim\limits_{x \to 3} \dfrac{x^2 - 9}{x - 3}$

2. $\lim\limits_{x \to 1} \dfrac{\sqrt{x + 2} - \sqrt{3}}{x - 1}$

3. $\lim\limits_{n \to \infty} (\sqrt{n^2 + n + 1} - \sqrt{n^2 + 1})$

OR

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Q.4   Evaluate following:

1. $\lim\limits_{x \to 2} \dfrac{x^3 - 3x^2 + 3x - 2}{x - 2}$

2. $\lim\limits_{x \to 0} \dfrac{2^x - 3^x}{x}$

3. $\lim\limits_{x \to 2} \dfrac{x^3 - 8}{x - 2}$

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