SC

SEAT No._____

No. of printed pages: 02

[60/A-25]

SARDAR PATEL UNIVERSITY
BBA (ISM) EXAMINATION
SEMESTER – I
Wednesday, 15th November 2017
2.00 p.m. to 4.00 p.m.
BUSINESS MATHEMATICS (UM01CBBS07)

Total Marks: - 60

Note: Figures to the right indicate marks.

Q.1

(a) Define following terms: 04
1. Intersection of two sets 2. Subset

(b) If $U = \{x: 1 \leq x \leq 10, x \in N\}, A = \{1,2,5,6,8\}, B = \{x: x \text{ is even}, x \leq 10, x \in N\}$ and $C = \{1,2,3,5,6,11,12\}$. Then find $B \cup A, A \cap C, B - C, A\Delta C$ *and* B'. 05

(c) **i)** Express the inequality in a Modulus form: $-1 < x < 7$ 06
ii) Find power set of set $A = \{a, b, c\}$.

Q.1 **OR**

(a) If A = set of the letters of the word 'HUMAN', B = set of the letters of the word 'WOMAN' and C = set of the letters of the word 'MAN' then 04
Find $A - B$ and $C \times C$.

(b) Verify following by Venn Diagram: 05
1. $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
2. $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

(c) **i)** Solve: $|x - 3| = 1$ 06
ii) Express 0.12121212....into quotient form.

Q.2

(a) Explain following terms with example: 04
1. Null Matrix
2. Symmetric matrix

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

(c) Solve the following equations by Inverse of matrix: 06
$2x + y = 4, \quad 5x + 3y = 9$

Q.2 **OR**

(a) If $A = \begin{bmatrix} 5 & 2 \\ -4 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & -2 \\ 5 & 1 \end{bmatrix}$, then verify that $(A + B)' = A' + B'$. 04

(b) Solve the following equations by Cramer's Rule: 05
$2x + 3y = 10, x + 6y = 4$

(c) If $A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & -1 & 2 \\ 2 & 3 & 1 \end{bmatrix}, B = \begin{bmatrix} 1 & 3 & 0 \\ 2 & 3 & 1 \\ 3 & 2 & 3 \end{bmatrix}$ and $C = \begin{bmatrix} 0 & 1 & 3 \\ 2 & 0 & 3 \\ 1 & 3 & 2 \end{bmatrix}$ 06

Then find **1.** $A + 2B$ **2.** $A + B + C$ **3.** $A - B + 2C$

Q.3

(a) Show that the equation of a line having $X-$ intercept a and Y- intercept b is $\frac{x}{a}+\frac{y}{b}=1$. 05

(b) Show that the points$(-2,3)$, $(5,8)$ and $(-9,-2)$ are collinear. 05

(c) Find the area of triangle having the vertices: 05
$P(-3,\ 2), Q(1,\ -2)$ and $R(5,\ 6)$.

Q.3 **OR**

(a) Show that the equation of the line passing through (x_1, y_1) with slope m is 05
$y - y_1 = m(x - x_1)$.

(b) Find the equation of a line having slope -4 and Y – intercept is 5. 05

(c) Find the equation of a line whose slope is -5 and which passes through the intersection of the lines $x-4y+18=0$ and $x+y-12=0$. 05

Q.4

(a) Write working rules for limit. 05

(b) Evaluate following: 10

1. $\lim\limits_{x\to 2}\frac{x^3-8}{x^2-4}$
2. $\lim\limits_{x\to 0}\frac{7^x-5^x}{x}$

Q.4 **OR**

(a) Evaluate : $\lim\limits_{n\to\infty}(\sqrt{n^2+n+1}-\sqrt{n^2+1})$ 05

(b) Evaluate following:

1. $\lim\limits_{x\to -3}\frac{x^2+5x+6}{x+3}$ 05
2. $\lim\limits_{x\to 1}\frac{\sqrt{x+2}-\sqrt{3}}{x-1}$ 05

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