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SARDAR PATEL UNIVERSITY
B.B.A. (General) EXAMINATION
SEMESTER – I (CBCS) (Regular)
Friday, 22nd November 2013
UM01CBBA07: BUSINESS MATHEMATICS

Time: - 2.30 p.m. to 4.30 p.m. **Total Marks: - 60**

Note: Figures to the right indicate marks.

Q.1

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

(b) **i)** Solve: $|x - 3| = 1$. 05
ii) If A = {1, 2, 3, 4, 5} and B = {2, 4, 6, 7} then find A Δ B.

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

Q.1 **OR**

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

(b) State and Verify Demorgan laws for two sets A and B by taking 05
U = $\{x \in N / 2 \leq x \leq 10\}$, A={7, 6, 5, 8}, B={2, 4, 5, 8}

(c) **i)** Express the following inequalities in a Modulus form: $-3 < x < 8$ 05
ii) Express 3.6666…. into quotient form.

Q.2

(a) Solve the following equations by using Cramer's rule: 05
$2(x - 1) + 3(y + 1) = 15$,
$2(y + 3) - 2(x - 2) = 6$

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

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

(c) If $A = \begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$. Then find $A + A^T + A^2$. 05

Q.2 **OR**

(a) Explain following terms with example: 04
1. Zero matrix
2. Diagonal matrix

(b) If $A = \begin{bmatrix} 1 & 2 & 3 \\ 0 & 3 & -1 \\ -3 & 0 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 & 4 \\ 0 & 1 & 2 \\ 1 & 3 & 0 \end{bmatrix}$, find AB and BA. Show that AB ≠ BA. 05

(c) Solve following by using inverse matrix. 06

$x + 3y + z = 1$
$x + y + 2z = 1$
$x + 2y + 3z = 1$

Q.3

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

(b) Find b if the distance between $(-3, -2)$ and $(b, 1)$ is $3\sqrt{10}$. 05

(c) Show that the points (2, 3), (6, 5) and (12, 8) are collinear. 05

Q.3 **OR**

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

(b) Find the equation of line passing through the points (0, 2) and (2, 1). Also find its slope and intercepts on the axes. 05

(c) **i)** Find the slope of the line joining the points A (2, 4) and B (3, 5). 05
ii) Find the equation of line having slope 3 and the intercept on Y – axis as 6.

Q.4

(a) Evaluate: $\lim_{x \to 2} \dfrac{x^2 - 4}{\sqrt{3x - 2} - \sqrt{x + 2}}$ 03

(b) If $f(x) = \dfrac{1}{x}$, then find $\lim_{x \to 3} \{f(1/x) + f(-x)\}$ 04

(c) Evaluate following: 08

1. $\lim_{x \to 0} \dfrac{5^x - 2^x}{4x}$
2. $\lim_{x \to 3} \dfrac{x^2 + 2x - 15}{x^2 - 9}$

Q.4 **OR**

(a) Evaluate following: 12

1. $\lim_{x \to 1} \dfrac{x^3 - 2x^2 + 2x - 1}{x - 1}$
2. $\lim_{x \to a} \dfrac{x^{-3} - a^{-3}}{x^{-2} - a^{-2}}$
3. $\lim_{x \to 3} \dfrac{\sqrt{x + 5} - 2\sqrt{2}}{\sqrt{x - 1} - \sqrt{2}}$

(b) Write working rules for limit. 03

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