[03] No. of printed pages : 2

SARDAR PATEL UNIVERSITY
B.B.A (ISM) (I SEM.) EXAMINATION
2013
Saturday, 5th January
10.30 am to 12.30 pm
UM01EBBS01 : BUSINESS MATHEMATICS - I

Total Marks: 60

Note: Figures to the right indicate marks.

Q.1

(a) Using Venn diagram show that [06]
$(\mathbf{A} \cap \mathbf{B})' = \mathbf{A}' \cup \mathbf{B}'$

(b) Solve the following equation [05]
$|x - 5| = 3$

(c) If $\mathbf{A} = \{1, 2, 3, 4\}, \mathbf{B} = \{3, 4, 9, 11\}$ and $\mathbf{C} = \{2, 11, 18, 22\}$ then find [04]
(i) $A \cap B$ (ii) $B \cap C$ (iii) $C \cap A$ (iv) $A \cap B \cap C$

OR

Q.1

(a) Explain the following terms. [04]
(i) Finite set (ii) Subset

(b) If $\mathbf{A} = \{5, 6, 7\}, \mathbf{B} = \{7, 8\}$ and $\mathbf{C} = \{5, 8\}$ then verify that, [06]
A x (B - C) = (A x B) - (A x C)

(c) Express the following inequality in modulus form -3 < x < 8. [05]

Q.2

(a) Solve the following equations by Cramer's rule. [05]
$x + 2y = 7$
$5x - 3y = -4$

(b) Find Adj. A. [05]
$$\mathbf{A} = \begin{bmatrix} 1 & 2 & 3 \\ -1 & 4 & -6 \\ 0 & -2 & 5 \end{bmatrix}$$

(c) Find the value of x if [05]
$$\begin{vmatrix} x & 4 & 4 \\ 4 & x & 4 \\ 4 & 4 & x \end{vmatrix} = 0$$

OR

Q.2

(a) Explain the following terms. [04]
(i) Square matrix (ii) Transpose of a matrix

(b) If $\mathbf{A} = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 3 & -1 \\ -3 & 1 & 2 \end{bmatrix}$ and $\mathbf{B} = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 2 \\ 1 & 2 & 0 \end{bmatrix}$ then find (i) AB and (ii) BA. [06]

(c) Solve the following equations by inverse matrix method. [05]
$3x + 2y = 7$
$11x - 4y = 3$

Q.3

(a) Find the equation of a line passing through (4, 2) and parallel to the line $3x - 2y = 5$. [05]

(b) Find the equation of a line with slope $\frac{1}{3}$ and intercept on Y-axis as 5. [05]

(c) Find the equation of a line whose intercept on X-axis as -3 and the intercept on Y axis is -4. [05]

OR

Q.3

(a) Explain the term: Slope of a line. Find the slope of line joining the points A (-2, 0) and B (5, -7). [05]

(b) Find the slope and intercepts on both axes of the line $3x + 4y = 12$. [05]

(c) Find the equation of a line perpendicular to the line joining the points (3,2) and (4, 0) and passing through (5, 7). [05]

Q.4

(a) Evaluate the following. [12]

(i) $\lim_{x \to 0} \frac{\sqrt{1+x}-1}{x}$

(ii) $\lim_{x \to 4} \frac{x^2-16}{x-4}$

(iii) $\lim_{x \to 4} \frac{x^2-3x-4}{x^2-2x-8}$

(b) State working rules of limits. [03]

OR

Q.4

Evaluate the following. [15]

(i) $\lim_{x \to a} \frac{x^{16}-a^{16}}{x^8-a^8}$

(ii) $\lim_{x \to 0} \frac{1}{x}\left\{\frac{1}{x-1} + \frac{1}{x+1}\right\}$

(iii) $\lim_{x \to 4} \frac{x^2-2x-8}{x^2-5x+4}$

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