

543

[29] Seat No. _____

No. of printed pages : 2

SARDAR PATEL UNIVERSITY
B.B.A. (General) (I Semester) Examination
Friday, 22nd April 2016
2.30 pm - 4.30 pm
UM01CBBA07 : BUSINESS MATHEMATICS

Total Marks: 60

Note : Figure to the right indicate full marks.

Q.1

- (a) Define the terms with examples. [05]
 (1) Union of two sets (2) Subset
 (3) Difference of two sets (4) Null set
 (5) Singleton set.
- (b) Express [05]
 (1) $|x+5| < 1$ in the form of an interval.
 (2) 0.0272727..... into quotient form.
- (c) If $A = \{1, 2, 5, 6, 9\}$, $B = \{2, 4, 6, 8\}$ and $C = \{2, 5, 10\}$ then state and verify Distributive laws. [05]

OR

Q.1

- (a) If $A = \{1, 3\}$, $B = \{5, 6\}$ and $C = \{6, 9\}$ then verify, [05]
 (1) $A \times (B \cap C) = (A \times B) \cap (A \times C)$
 (2) $A \times (B \cup C) = (A \times B) \cup (A \times C)$
- (b) Express, [05]
 (1) $-3 < x < 8$ in a modules form
 (2) $0 \leq |x+3| \leq 1$ into an interval form.
- (c) Write De' Morgan laws and verify it for following. [05]
 $A = \{1, 2, 4, 6, 8\}$, $B = \{2, 3, 6, 7, 9\}$ and
 $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

Q.2

- (a) Solve by Cramer's rule : [05]
 $2x + 5y = 4$, $3x - 2y = 7$
- (b) Solve the following system of equations using inverse of a matrix. [06]
 $x + y + z = 3$, $x + 2y + 3z = 6$, $3x + y + 2z = 6$.
- (c) Define the terms. [04]
 (1) Square matrix (2) Transpose of a matrix
 (3) Identity matrix (4) Null matrix.

OR

Q.2

- (a) Solve by Cramer's rule. [05]
 $\frac{7}{x} + \frac{3}{y} = -4$, $\frac{3}{x} - \frac{4}{y} = -7$

- (b) If $A = \begin{bmatrix} 3 & 5 \\ 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 5 \\ 3 & 4 \end{bmatrix}$ then prove that [06]

(1) $(AB)^T = B^T A^T$

(2) $(A+B)^T = A^T + B^T$

- (c) Write the rules of determinant. [04]

Q.3

- (a) Find the equation of a line passes through the intersection of $x - y + 2 = 0$ and $2x + 3y - 6 = 0$ and parallel to $x - 2y + 5 = 0$ [05]
 (b) Check that the lines $x + y - 5 = 0$, $x + 6y = 0$ and $x - y - 7 = 0$ are concurrent or not. [05]
 (c) Obtain the equation of a line passing through a point $A(x_1, y_1)$ and having slope m . [05]

OR

Q.3

- (a) Find the equation of a line passing through the point $(2, 3)$ and making equal intercepts on both axes. [05]
 (b) Find 'x' if $d \{(x, -4), (-8, 2)\} = 10$ [05]
 (c) Find the equation of a line passing through the points $(1, 0)$ and $(2, -1)$. Does the point $(2, 2)$ lie on the line? [05]

Q.4

- (a) Write the rules for limit. [03]
 (b) Evaluate,

(1) $\lim_{x \rightarrow 3} \frac{x^3 - 27}{x^2 - 9}$ [04]

(2) $\lim_{x \rightarrow 1} \left[\log x + \frac{1-x}{1-\sqrt{x}} \right]$ [04]

(3) $\lim_{x \rightarrow 3} \frac{\sqrt{x+2} - \sqrt{5}}{x-3}$ [04]

OR

Q.4 Evaluate,

(1) $\lim_{x \rightarrow \infty} \sqrt{n^2 + n + 1} - \sqrt{n^2 + 1}$ [05]

(2) $\lim_{x \rightarrow 0} \frac{7^x - 3^x}{x}$ [05]

(3) If $f(x) = x^2$ then $\lim_{x \rightarrow 0} \frac{f(x+4) - f(x-4)}{x}$ [05]
