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SARDAR PATEL UNIVERSITY
FYBBA (I Semester) Examination
Friday, 15 June 2012

11am - 1pm

UM01CBBS07 - BUSINESS MATHEMATICS

Total Marks :60

Q.1

- (a) If $A = (-3, -2, 2, 0)$ and $b = (3, 2, -2, 0)$ then find [04]
 (1) $A \times B$ (2) $A \cup B$ (3) $A \cap B$ (4) $A - B$
- (b) State the associative and distributive law for three sets A, B, C and verify them by taking [06]
 $A = (1, 2, 5, 6, 8)$, $B = (2, 4, 6, 10, 11)$ and
 $C = (1, 2, 3, 5, 6, 11, 12)$
- (c) Prove that $\sqrt{2}$ is an irrational number. [05]

OR

Q.1

- (a) Express [03]
 1. $0.1666 \dots$ in to a quotient form. [03]
 2. $\frac{1}{x-3} < 2$ in the form of an interval. [06]
- (b) Define the terms with example [06]
 1. Subset 2. Singleton set 3. Null set
 4. Union of two sets 5. Difference of two sets 6. Complement of a Set.
- (c) If $A = (1, 2)$ and $B = (3, 4)$ then find $A \times B$ and $B \times A$.

Q.2

- (a) Write the properties of Determinant. [04]
- (b) [06]
 If $A = \begin{bmatrix} 3 & 2 \\ 5 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 2 \\ 2 & 1 \end{bmatrix}$
 then find $AB + B^{-1} A^{-1}$
- (c) [05]
 If $A = \begin{bmatrix} 4 & 2 \\ -1 & 3 \\ 2 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} -2 & 5 \\ 3 & -1 \\ 5 & 2 \end{bmatrix}$
 and $C = \begin{bmatrix} 2 & 4 \\ -1 & -5 \\ 3 & -2 \end{bmatrix}$ then find
 1. $A+B$ 2. $A+B+C$ 3. $3A-2B+2C$

OR

Q.2

- (a) Find the value of K [05]

$$\text{If } \begin{vmatrix} 1 & 2 & 5 \\ 2 & K & 0 \\ 7 & 14 & 9 \end{vmatrix} = \begin{vmatrix} 16 & 8 & 26 \\ 6 & 3 & 7 \\ 2 & 1 & 4 \end{vmatrix}$$

- (b) Solve the following equations by cramer's rule. [05]

$$3x+4y = 6xy$$

$$2x+5y = 5xy$$

- (c) Solve the following equations using inverse of a matrix [05]

$$2x+y = 4$$

$$5x+3y = 9$$

Q.3

- (a) Find X if the distance between P(-3, -2) and X (X,1) is [04]

- (b) Find the equation of a line passing through the points (-1,2) and (5,-3). Find its slope and intercepts on the axes. [05]

- (c) A line passes through the point of intersection of the lines $X+2y-1=0$ and $2X+3Y-4=0$ and it makes equal intercepts on both the axes. Find the equation of a line and its slope. [06]

OR

Q.3

- (a) Find the equation of a line passes through the point of intersection of $5X+Y+4=0$ and $2X+3Y-1=0$ and is perpendicular to $2X-Y-8=0$ [05]

- (b) Determine the particular value of parameter K, if [06]
1. $3Kx+5y+k = 0$ passes through the point (-1,4)
 2. $4x-ky-7$ has the slope 3.

- (c) Let P (1,2) and x (-1,-2) be given point. Find the slope of a line which is perpendicular to the line PQ. [04]

Q.4

- (a) Evaluate

$$1. \quad \lim_{x \rightarrow 1} \frac{x^3 - 1}{x^2 - 1} \quad [03]$$

$$2. \quad \lim_{x \rightarrow 2} \frac{1 - x}{1 - \sqrt{x}} \quad [03]$$

$$3. \quad \lim_{x \rightarrow 0} \frac{\sqrt{x^2 + x - 3} - xc}{x - 2} \quad [05]$$

- (b) Write the rules for limit. [04]

OR

Q.4

(a) Evaluate

$$1. \quad \lim_{x \rightarrow 20} \frac{1^2 + 2^2 + \dots + n^2}{2n^3} \quad [03]$$

$$2. \quad \lim_{x \rightarrow 0} \frac{2^{5x} - 5^{2x}}{2^{2x} - 2^{3x}} \quad [03]$$

(b) If $f(x) = \frac{1}{x}$ then

$$\text{Find } \lim_{x \rightarrow 3} \left[f(1/x) + f(-x) \right] \quad [05]$$

