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SARDAR PATEL UNIVERSITY
BBA (ISM) (I Semester) (CBCS) Examination
Friday, 22nd April, 2016
2.30 – 4.30 pm
UM01CBBS07 - Business Mathematics

Total Marks: 60

- Q1 [1] Define the terms with illustration: [4]
- (1) Intersection of two sets
- (2) Symmetric difference of two sets
- [2] Find $A \times B$, $A \Delta B$, $A \cap B$, $A - B$, $A \cup B$, if $A = \{a, b\}$ & $B = \{e, f\}$. [5]
- [3] If $A = \{1, 2, 3\}$, $B = \{1, 2\}$ & $C = \{2, 3\}$ then prove distributive laws. [6]

OR

- Q1 [1] Express $-5 < x < 8$ in modulus form. [4]
- [2] Express $0.0272727\dots$ into quotient form. [5]
- [3] Express the following in the form of interval. [6]
- (1) $|x - 5| < 2$ and (2) $|x + 7| < 1$.
- Q2 [1] Write the properties of determinants. [4]
- [2] If $\begin{pmatrix} x & x+y \\ 4 & 3 \end{pmatrix} = \begin{pmatrix} 1 & 7 \\ 4 & 3 \end{pmatrix}$, find x and y. [5]
- [3] Solve the following system of equations using inverse of matrix. [6]
- $x + y + z = 3$
 $x + 2y + 3z = 6$
 $3x + y + 2z = 6$.

OR

- Q2 [1] Using Cramer's rule, solve the following equation. [4]
- $5x + 3y = 4$
 $3x - 2y = 7$
- [2] If $A = \begin{pmatrix} 0 & 4 & 3 \\ 1 & -3 & -3 \\ -1 & 4 & 4 \end{pmatrix}$, then show that $A^2 = I$. [5]

(P.T.O.)

[3] If $A = \begin{pmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{pmatrix}$, then prove that $A^2 - 4A = 5I$ and use it to find A^{-1} . [6]

Q3 [1] Find the distance between the points (4, 3) and (-9, -2). [4]

[2] Find the equation of the line whose slope is 2 and which passes through the point of intersection of the lines $x - 4y + 18 = 0$ and $x + y - 12 = 0$. [5]

[3] Find the equation of line passing through the point of intersection of the lines $5x + y + 4 = 0$ & $2x + 3y - 1 = 0$ & is perpendicular to $2x - y - 8 = 0$. [6]

OR

Q3 [1] Show that the three lines $x + y - 5 = 0$, $x + 6y = 0$ and $x - y - 7 = 0$ are concurrent. [4]

[2] Find k if the points (2, 3/2), (-3, -7/2) and (k, 9/2) are collinear. [5]

[3] Find the equation of the line which passes through the point of intersection of the lines $x + 2y - 1 = 0$ and $2x + 3y - 4 = 0$ and makes equal intercept on both axis. [6]

Q4 [1] Evaluate: $\lim_{x \rightarrow -1} \frac{x^2 + 3x + 2}{x + 2}$ [4]

[2] Evaluate: $\lim_{x \rightarrow 3} \frac{\sqrt{x+5} - 2\sqrt{2}}{\sqrt{x-1} - \sqrt{2}}$ [5]

[3] Evaluate: $\lim_{n \rightarrow \infty} \frac{1^2 + 2^2 + \dots + n^2}{2n^3}$ [6]

OR

Q4 [1] Write the rules of limits. [4]

[2] Evaluate: $\lim_{x \rightarrow a} \frac{x^{16} - a^{16}}{x^8 - a^8}$ [5]

[3] Evaluate: $\lim_{n \rightarrow \infty} \left(\frac{n}{n+4} \right)^{5n+3}$ [6]

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