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 $A = \{1, 2, 3\}$, $B = \{1, 2\}$ & $C = \{2, 3\}$ than prove distributive laws. [6]

OR

Q1 **[1]** Express $-5 < x < 8$ in modulus form. [4]

[2] Express 0.0272727... 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 $A = \begin{pmatrix} 0 & 4 & 3 \\ 1 & -3 & -3 \\ -1 & 4 & 4 \end{pmatrix}$, than show that $A^2 = I$. [5]

(P.T.O)

(1)

[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 : $\lim\limits_{x \to -1} \dfrac{x^2 + 3x + 2}{x + 2}$ [4]

     [2]   Evaluate: $\lim\limits_{x \to 3} \dfrac{\sqrt{x+5} - 2\sqrt{2}}{\sqrt{x-1} - \sqrt{2}}$ [5]

     [3]   Evaluate: $\lim\limits_{n \to \infty} \dfrac{1^2 + 2^2 + \ldots + n^2}{2n^3}$ [6]

OR

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

     [2]   Evaluate : $\lim\limits_{x \to a} \dfrac{x^{16} - a^{16}}{x^8 - a^8}$ [5]

     [3]   Evaluate : $\lim\limits_{n \to \infty} \left(\dfrac{n}{n+4} \right)^{5n+3}$ [6]

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