SARDAR PATEL UNIVERSITY

BBA(ISM) SEM-I EXAMINATION (NC)

DATE: 29-10- 2018   **BUSINESS MATHEMATICS**   TIME: 2:00pm to 4:00pm

Monday   **Subject code: UM01CBBS07**   **Total Marks: 60**

Note: (1) Use of simple calculator is allowed

(2) Figures on right indicate marks

Q-1 (A) Explain the following terms: (1) Union of sets (2) Power set   (5)

(B) If A={2,3,4}, B={1,3,4}, S={1,2,3} and T={1,3,5} verify that $(A \times B) \cap (S \times T) = (A \cap S) \times (B \cap T)$ (5)

(C) If U={x| $10 \leq x \leq 16, x \in N$ }, A={12,13,14} , B={13,14,15,16} show that

(1) (A∪B)'= A'∩B' (2) (A∩B)'= A'∪B'   (5)

OR

Q-1 (A) Explain the following terms: (1) Complement set (2) Difference of sets   (5)

(B) If A={2,3,4}, B={3,4,5,6},C={2,4,6,8} verify that(1) A∪B = (A-B) ∪ B (2) A∩ (B-C) = (A∩B)-(A∩C)   (5)

(C) Express the following in the form of an interval: (1) $|x - 5| < 7$ (2) $|2x + 3| \leq 5$ (5)

Q-2 (A) Define the following terms: (1) Identity matrix   (2) Transpose of a matrix   (5)

(B) If A=$\begin{bmatrix} 0 & 4 & 3 \\ 1 & -3 & -3 \\ -1 & 4 & 4 \end{bmatrix}$ prove that $A^2 = I$ (5)

(C) If A=$\begin{bmatrix} 5 & 3 & 2 \\ -4 & 2 & 3 \\ 3 & 8 & 1 \end{bmatrix}$, H=$\begin{bmatrix} 6 & -2 & 7 \\ 3 & -1 & -6 \\ 0 & 9 & -1 \end{bmatrix}$ find (2H - I) A   (5)

OR

Q-2 (A) Explain the rules of determinant   (5)

(B) If A=$\begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$, find $A + A^T + A^{-1}$ (5)

(C) Solve the following equations by Cramer's method: (5)

2x + 3y = 18 and   x + 3y = 12

Q-3 (A) Derive an equation of line passing through a point A (x_1, y_1) with slope m   (5)

(B) Obtain the slope and intercepts on both the axes of line joining the points (3,-5) and (-7,9)   (5)

(C) Find area of triangle whose vertices are A (5,5), B (2,1) and C (8,1)   (5)

OR

Q-3 (A) Obtain an equation of straight line with slope m and making intercept c on y axis   (5)

(B) Find the equation of a line passing through (4,2) and parallel to 3x-2y=5   (5)

(C) Find the equation of line passing through (3,1) and the point of intersection of 4x+5y+7=0 and 3x-2y-12=0   (5)

Q-4 (A) Explain the meaning of limit and its rules (6)

(B) Evaluate the followings: (9)

(1) $\lim_{x\to 3} \dfrac{x^2+2x-15}{2x^2+3x-27}$ (2) $\lim_{x\to\infty} \dfrac{2x^3+x^2-5}{(x^2+3)(3x-4)}$ (3) $\lim_{x\to 5} \dfrac{\sqrt{x+2}-\sqrt{7}}{x-5}$

OR

Q-4 (A) If $f(x) = 3x^2-2$ find $\lim_{x\to 0} \dfrac{f(x+h)-f(x)}{h}$ (6)

(B) Find the limit of the following functions: (9)

(1) $\lim_{x\to 4} \dfrac{x^3-64}{x^4-4^4}$ (2) $\lim_{x\to 0} \dfrac{3^x+2^x-2}{x}$ (3) $\lim_{x\to\infty} \left(1+\dfrac{3}{5x}\right)^x$

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