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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 [04]
b= (3,2,-2,0) then find
(1) AXB (2) AUB (3) A 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 $\sqrt{2}$ an is an irrational number. [05]

OR

Q.1

(a) Express
1. 0.1666 ..... in to a quotient furm. [03]
2. $\leq$ /x-31 $<$ 2 in the furm of an interval. [03]

(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 AXB and BxA.

Q.2

(a) Write the properties of Determiant. [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 $A = \begin{bmatrix} 4 & 2 \\ -1 & 3 \\ 2 & 0 \end{bmatrix}$ $\begin{bmatrix} -2 & 5 \\ 3 & -1 \\ 5 & 2 \end{bmatrix}$
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. $\lim_{x \to 1} \frac{x^3 - 1}{x^2 - 1}$ [03]

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

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

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

OR

Q.4

(a) Evaluate

1. $\lim_{x \to 20} \dfrac{1^2 + 2^2 + ... + n^2}{2n3}$ [03]

2. $\lim_{x \to 0} \dfrac{2^{5x} - 5^{2x}}{2^{2x} - 2^{3x}}$ [03]

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

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