(129) SEAT No._____ No. of Printed Pages : 2

SARDAR PATEL UNIVERSITY

OCTOBER - NOVEMBER : 2018 EXAMINATION, BBA (General) SEMESTER : I

MONDAY, 29/10/2018

EVENING SESSON TIME : 2.00 TO 4.00 PM

SUBJECT CODE : UM01DBBA22

BUSINESS MATHEMATICS - I

TOTAL MARKS : 60

Q-1 (A) State distributive laws for three sets A, B, C and verify them by taking A = {1, 2, 5, 6, 8}, B = { 2, 4, 6, 10, 11}, C = {1, 2, 3, 5, 6, 11, 12}. [06]

Q-1 (B) Write the rules of determinant. [04]

Q-1 (C) Solve the following equations by Cramer's rule. [05]

$2(x-1) + 3(y+1) = 15$

$2(y+3) - 2(x-2) = 6$

OR

Q-1 (A) If A = {5, 6, 7}, B = {7, 8} and C = {5, 8} then verify that A X (B-C) = (AXB) – (AXC) [06]

Q-1 (B) Define the terms : [04]

(1) Subset (2) Union and intersection of two sets (3) Null Set

Q-1 (C) Solve the following equations by Cramer's rules. [05]

$\frac{7}{x}+\frac{3}{y}=-4, \qquad \frac{3}{x}-\frac{4}{y}=-7$

Q-2 (A) Solve the following equations by inverse matrix [06]

$3x - 2y + z = 2,$

$x + 3y - 2z = 2$

$2x - y + z = 2$

Q-2 (B) Define the terms : [04]

(1) Square matrix (2) Transpose of a matrix (3) Identity matrix (4) Row matrix

Q-2 (C) [05]

If $A = \begin{bmatrix} 1 & 2 & 2 \\ 1 & 2 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ then find $A^2 - A + I$

OR

Q-2 (A) [06]

If $A = \begin{bmatrix} 3 & 5 \\ 1 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 4 & 5 \\ 3 & 4 \end{bmatrix}$ then verify

(1) $(A+B)^T = A^T+B^T$ (2) $(AB)^T = B^TA^T$

Q-2 (B) [04]

If $A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 2 & 3 \\ -1 & -2 & -3 \end{bmatrix}$ then prove that $A^2 = 0$

(P.T.O)

Q-2 (C) $A=\begin{bmatrix}1&2&3\\-1&2&0\\1&4&-2\end{bmatrix}$, $B=\begin{bmatrix}0&1&3\\2&0&3\\5&4&-1\end{bmatrix}$ and $C=\begin{bmatrix}1&0&2\\0&1&2\\1&2&0\end{bmatrix}$ [05]

then find

(1) 2A + C (2) A – B + 3C (3) A + B + C

Q-3 (A) If the rate of interest is 12% what sum should Kanisha deposit in her recurring account in bank in the beginning of every year so that her 5 years old son can receive Rs. 1,50,000 when he is 25 years old? [06]

Q-3 (B) Define the terms. [04]

(1) Simple Interest (2) Compound interest

(3) Effective rate of interest (4) Sinking Fund

Q-3 (C) What is an aggregate amount of Rs. 16,000 at 9% rate of compound interest for 8 years if the interest is compounded [05]

(1) Once in a year

(2) Twice in a year

OR

Q-3 (A) A person has to pay 10 installment each of Rs. 18,000 at the end of every year for a loan. If the rate of compound interest is 10% per annum. Find the amount of the loan. [06]

Q-3 (B) Define Annuity with it's formula which you study. [04]

Q-3 (C) The population of a city at present is 75162 which was 65673 before 5 years. Find out the rate of growth of population. [05]

Q-4 (A) Write the assumptions and uses of interpolation and extrapolation . [07]

Q-4 (B) From the following data, interpolate the value of 26. [08]

X	20	25	30	35	40
Y	23	26	30	35	42

OR

Q-4 (A) Estimate the population in the year 1985 by using the following data. [07]

Year	1965	1970	1975	1980
Population in Thousand	12	14	18	24

Q-4 (B) Estimate the percentage of criminals of age less than 35 using the following data. [08]

Age	25	30	40	50
Percentage of Criminal	52.0	67.3	84.1	94.4

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