

BACHELOR OF COMMERCE (CBCS - 2018 COURSE)
F. Y. B. Com. Sem-II : WINTER :- 2021
SUBJECT: BUSINESS MATHEMATICS & BUSINESS STATISTICS-II

Day : Saturday
 Date 29-01-2022

W-18141-2021

Time : 02:00 PM-05:00 PM
 Max. Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable **CALCULATOR** is allowed.

Q.1 Attempt **ANY TWO** of the following: **[12]**

- a) State the properties of correlation coefficient.
- b) Fit a regression line of Y on X to the following data. Also obtain value of Y when X is 14.

X	2	4	6	8	10
Y	4	6	8	10	7

- c) Find the coefficient of variation for the data given below:

Size of item	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30
f	06	10	20	24	12	8

Q.2 Attempt **ANY THREE** of the following: **[12]**

- a) A study of wheat prices at Mumbai and Kanpur yield the following data:

	Mumbai	Kanpur	$r = 0.774$
Mean	₹ 20	₹ 21	
Standard deviation	₹ 0.326	₹ 0.207	

Estimate the price at Kanpur if the price at Mumbai is ₹ 25/- using the above data.

- b) Obtain the rank correlation coefficient for the ranks given by two judges in a contest:

Ranks by Judge A	3	6	2	4	5	1
Ranks by Judge B	4	5	2	3	6	1

- c) Find the range and coefficient of range for the following data:
 30, 26, 24, 23, 20, 13, 18, 17, 40.

- d) Draw the scatter diagram for the following data and interpret the result.

X	45	70	65	30	90	40	50	75	85	60
Y	35	70	90	40	95	40	60	80	80	50

Q.3 Attempt **ANY TWO** of the following: **[12]**

- a) Solve the following equations by Cramer's rule:
 $12x + 3y = 15$, $2x - 3y = 13$

- b) Find inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 5 \\ 3 & 5 & 6 \end{bmatrix}$ by adjoint method.

- c) A person takes a loan of ₹ 10,000 from a bank for a period of 1 year. The rate of interest is 10% p.a. Find the simple interest and the amount he has to pay at the end of a year.

P.T.O.

Q.4 Attempt **ANY THREE** of the following: **[12]**

a) Find the difference between compound interest and simple interest on ₹ 500 for 2 years at 10% p.a. (compounded yearly).

b) Find the amount of ₹ 1200 at 12% p.a. in 4 years compounded half yearly.

c) Find the values of x and y if

$$\begin{bmatrix} x & 3 \\ y & 2 \end{bmatrix} \begin{bmatrix} 2 \\ 3 \end{bmatrix} = \begin{bmatrix} 15 \\ 12 \end{bmatrix}$$

d) If $A = \begin{bmatrix} 2 & 1 & 4 \\ 3 & 0 & 2 \\ 1 & 2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} -1 & 1 & 1 \\ 2 & 3 & 0 \\ 1 & -2 & 1 \end{bmatrix}$ then show that $AB \neq BA$.

Q.5 A) Attempt **ANY TWO** of the following: **[06]**

a) State the demerits of the standard deviation.

b) If correlation coefficient between X and Y is 0.9375 find that between

i) $\frac{X}{2}$ and $\frac{-Y}{5}$ ii) $X - 10$ and $10 - Y$ iii) $3X$ and $\frac{4Y}{5}$

c) State the utility of regression lines.

B) Attempt **ANY TWO** of the following: **[06]**

a) State the type and order of following matrices:

i) $\begin{bmatrix} 2 & 0 \\ -1 & 2 \end{bmatrix}$ ii) $\begin{bmatrix} -1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 4 \end{bmatrix}$

b) Define: i) Amount ii) Principle (sum)

c) Write short note on equated monthly installment (EMI).

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