

F.Y.B.COM. SEM – II (CBCS - 2016 COURSE) : WINTER -
2017

SUBJECT : BUSINESS MATHEMATICS & BUSINESS STATISTICS-II

Day : Wednesday
Date : 01/11/2017

Time : 03.00 PM TO 06.00 PM
Max. Marks : 60

W-2017-0223

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of Logarithmic table and pocket **CALCULATOR** is allowed.

Q.1 A) Choose correct alternative for: [06]

- i) Given $A = [3, 1, 0]$, what is order of matrix A?
a) 1×1 b) 1×3 c) 3×1 d) 1×2
- ii) If $D = \begin{vmatrix} 2 & 0 \\ 0 & 4 \end{vmatrix}$, then D is _____.
a) 2 b) 0 c) 8 d) -8
- iii) What is simple interest on ₹ 500/- at 10% p.a. for 6 months?
a) ₹ 50 b) ₹ 25 c) ₹ 20 d) ₹ 30
- iv) SD of $\{5, 5, 5, 5, 5\}$ is _____.
a) 0 b) 5 c) 10 d) 25
- v) In the following which is measure of dispersion _____.
a) mean b) range c) mode d) median
- vi) If correlation coefficient between X and Y is 0.4 and their covariance is 12. If variance of X is 9, then standard deviation of Y _____.
a) 9 b) 10 c) 11 d) 12

B) Attempt the following: [06]

- i) Define column matrix.
- ii) Write a formula for compound interest for i^{th} year.
- iii) If $A = \begin{bmatrix} 3 & 0 \\ 0 & y \end{bmatrix} = \begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$, then y is _____.
- iv) If $\bar{x} = 10$ and standard deviation = 40, find coefficient of variation.
- v) What is rank correlation?
- vi) State the relation between regression coefficients and correlation coefficients.

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

- a) Find correlation coefficient between X and Y given following data:
 $n = 10, \sum X = 9, \sum X^2 = 653, \sum Y = 5, \sum Y^2 = 595, \sum XY = 534.$
- b) Ten competitors in a beauty contests are ranked by 2 judges in the following order:

Judge A	6	1	10	5	2	3	9	4	8	7
Judge B	4	6	8	9	2	1	10	3	5	7

Find rank correlation coefficient.

P.T.O.

- c) A study of wheat prices at Mumbai and Pune yield the following data:

	Mumbai	Pune
Mean	₹17.50	₹ 18.10
Standard Deviation	0.641	0.401
Correlation Coefficient	0.774	

Estimate the price at Pune if the price at Mumbai is ₹ 10.

Q.3 Attempt **ANY THREE** of the following:

- a) A group of 70 items have Mean and S.D. 81 and 9 respectively. Another group of 100 observations has Mean and S.D. 80 and 12 respectively. Find Mean and S.D. of combined group.

- b) Find variance for:

Class	40 – 60	60 – 80	80 – 100	100 – 120	120 – 140
Frequency	6	12	17	10	5

- c) What is scatter diagram? and how it helps in determining types of correlation.
- d) Find range and coefficient of range for:
30, 26, 24, 23, 20, 13, 18.

Q.4 Attempt **ANY TWO** of the following:

- a) If $A = \begin{bmatrix} 3 & 2 & 1 \\ 4 & 0 & 9 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & -3 & -4 \\ 4 & 0 & 1 \end{bmatrix}$, then find $3A + 2B$ and $B - 2A$.
- b) A sum of money amounts to ₹ 10,400 in 6 years and ₹ 11,200 in 8 years. Find the sum and the rate of interest.
- c) Find the EMI on a loan of ₹ 2,00,000/- to be repaid in equal monthly instalments. Interest is charged at 12% p.a. on the loan outstanding at the beginning of each month and the time span in 5 years.

Q.5 Attempt **ANY THREE** of the following:

- a) What is the order and type of following matrices?

i) $\begin{bmatrix} 3 & 2 \\ 4 & 0 \end{bmatrix}$ ii) $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$

- b) Find the value of following Determinant

$$D = \begin{vmatrix} 1 & -2 & 3 \\ 0 & 5 & 1 \\ 4 & 1 & 1 \end{vmatrix}$$

- c) Define the following terms:

i) Principal ii) Amount

- d) Find the simple interest on ₹ 3,250/- for 3.5 years at 12% p.a. Also find amount.

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