

F.Y.B.COM. SEM – II (CBCS - 2016 Course) : WINTER - 2018
SUBJECT: BUSINESS MATHEMATICS & BUSINESS STATISTICS-II

Day: Wednesday
Date: 17/10/2018

W-2018-0276

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

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 $B = \begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$, what is type of matrix B ?

- b) Row matrix b) Zero matrix
c) Scalar matrix d) Identity matrix

ii) if $\begin{bmatrix} x-4 & 3 \\ 5 & 4 \end{bmatrix} = \begin{bmatrix} 4 & 4 \\ 5 & 4 \end{bmatrix}$ then x is...

- b) 3 b) 0 c) 4 d) 8

iii) What is simple interest on Rs. 700/- at 12% p.a. for 8 months?

- a) Rs. 56 b) Rs. 84
c) Rs. 70 d) Rs. 100

iv) Which one of the following relation between variance and standard deviation is true?

- a) $SD = \text{Var}(X)$ b) $SD = [\text{Var}(X)]^2$
c) $[SD]^2 = \text{Var}(X)$ d) None of above

v) If correlation coefficient between X and Y is 0 then, regression lines will be

- a) Parallel to each other b) Perpendicular to each other
c) Coincident d) None of above

vi) The two regression coefficients are 0.2 and 0.8 then correlation coefficient will be

- a) 1.6 b) 0.4 c) 0.16 d) 1.0

B) Attempt the following: **(06)**

i) Define square matrix

ii) State the formula for compound interest for 4 years.

iii) Find the value of $D = \begin{vmatrix} 4 & -4 \\ 6 & 6 \end{vmatrix}$

iv) Define negative correlation.

v) What will be the standard deviation of the three observation 1.2 1.2 1.2?

vi) Define Range.

Q.2 Attempt **ANY TWO** of the following: **(12)**

a) Find n if, $r = 0.5$, $\sum(X - \bar{X})(Y - \bar{Y}) = 120$, $\sum(X - \bar{X})^2 = 90$, $\sigma_y = 8$.

b) Seven competitors in a beauty contest are ranked by 2 judges in the following order

| | | | | | | | |
|----------------|---|---|---|---|---|---|---|
| Judge A | 5 | 1 | 4 | 3 | 2 | 6 | 7 |
| Judge B | 3 | 2 | 5 | 1 | 4 | 7 | 6 |

Compute rank correlation coefficient.

P.T.O.

- c) Two regression lines are given by $X + 2Y - 26 = 0$ and $6X + Y - 31 = 0$. Calculate mean values of X and Y and correlation coefficient between X and Y.

Q.3 Attempt ANY THREE of the following: (12)

- a) Find variance for the following data

| Class | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 |
|-----------|-------|-------|-------|-------|-------|
| Frequency | 9 | 15 | 18 | 14 | 5 |

- b) Write merits and demerits of standard deviation.
 c) Find range and coefficient of range for the following data:
 28 22 14 18 30 25 35

- d) Find combined S.D. from the following data:

| | Boys | Girls |
|----------------------------|------|-------|
| Total | 72 | 68 |
| Mean Height (in inches) | 68 | 61 |
| S.D. | 9 | 6 |

Q.4 Attempt ANY TWO of the following: (12)

- a) if $A = \begin{bmatrix} 3 & 1 & 2 \\ 4 & 1 & 6 \end{bmatrix}$, $B = \begin{bmatrix} 1 & 0 & 0 \\ 2 & 3 & 5 \end{bmatrix}$ and $C = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 5 & 6 \end{bmatrix}$

Find $A+2C$ and $C-2B$

- b) A person borrows Rs. 15000/- partly at 10% and remaining at 12%. If at the end of $2\frac{1}{2}$ years, he pays a total simple interest Rs. 4050/- how much did he borrow at each rate?
 c) Find the EMI on a loan of Rs. 100000/- to be x paid in 2 years of 12% p.a. on the outstanding amount at the beginning of each month.

Q.5 Attempt ANY THREE of the following: (12)

- a) Solve the system of equations by using Cramer's rule
 $2x + y = 4$ and $x + 3y = 6$

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

i) $[3 \ 2 \ 5]$ ii) $\begin{bmatrix} 3 & 0 \\ 0 & 2 \end{bmatrix}$

- c) Find the compound interest on Rs. 25000/- for 5 years at 5% p.a.
 d) Define Principal and Amount.

* * * *