

Credit Based I Semester B.Com. Degree Examination, Oct./Nov. 2016
(2014-15 Batch Onwards)

COMMERCE

Business Statistics and Mathematics

Time : 3 Hours

Max. Marks : 80

- Instructions:** 1) *Non-programmable* calculator may be used.
2) Logarithm tables will be **provided on request**.
3) Provide working notes **wherever** necessary.

SECTION – A

Answer **any four** of the following :

(4×4=16)

1. What are the essentials of a good average ?
2. The following data relates to share prices of two companies A and B during a week. Determine which company's share price is more stable ?

	Company	
	A	B
Mean	140	210
S.D.	2.3	2.9

3. Define index numbers and write down their uses.
4. If $A = \begin{bmatrix} 0 & -1 & 2 & 0 \end{bmatrix}$ find $A'A$.
5. Define a matrix and write down any four types of matrices with example.
6. Compute Arithmetic Mean price index number for the following data :

Commodities	A	B	C	D	E
Price in 2012	20	30	10	25	40
Price in 2016	25	30	15	35	45



SECTION - B

Answer any four of the following :

(4×8=32)

7. What are the important steps in the construction of the cost of living index numbers ?
8. For the following data calculate mean, median and mode :

Variable : 10-20 20-30 30-40 40-50 50-60 60-70 70-80

Frequency : 10 20 35 40 25 25 15

9. From the following data calculate the variance :

Marks (Below)	Number of Students
20	2
24	6
28	10
32	18
36	30
40	46
44	56
48	64
52	68
56	74
60	76

10. Calculate Fisher's Ideal Index Number from the following data :

Commodity	Base Year		Current Year	
	Price (₹)	Expenditure (₹)	Price (₹)	Expenditure (₹)
A	2	40	5	75
B	4	16	8	40
C	1	10	2	24
D	5	25	10	60



11. If $A = \begin{bmatrix} 1 & 0 & -1 \\ 3 & 4 & 5 \\ 0 & -6 & -7 \end{bmatrix}$. Find the value of $A^2 - 5A + 4I$.

12. If $A = \begin{bmatrix} 2 & -3 & -5 \\ -1 & 4 & 5 \\ 1 & -3 & -4 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$. Find $(AB)'$ and $B'A'$ and

comment.

SECTION - C

Answer **any two** of the following :

(2x16=32)

13. Find Geometric mean and Harmonic mean for the following data :

Class	20 - 35	35 - 50	50 - 65	65 - 80	80 - 95	95 - 110	110 - 125
Frequency	5	8	22	25	18	14	18

14. Marks scored by two candidates A and B in 10 tests are given below :

A : 58 59 60 54 65 66 52 75 69 52

B : 84 56 92 65 86 78 44 54 78 68

i) Who is better scorer ?

ii) Who is more consistent in scoring ?

15. Solve the following equations by Cramer's Rule :

$$4x + y = 7$$

$$3y + 4z = 5$$

$$5x + 3z = 2$$

16. Solve the following equations by Matrix Inverse Method :

$$x + 2y + 3z = 6$$

$$2x + 4y + z = 7$$

$$3x + 2y + 2z = 7$$