**Credit Based I Semester B.Com. Degree
Examination, November/December 2015
(2014-15 Batch Onwards)
COMMERCE
Business Statistics and Mathematics**

Time : 3 Hours

Max. Marks : 80

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

SECTION – A

Answer **any four**.

(4×4=16)

1. Define "Average". What are the desirable qualities of an ideal average ?

2. Write the causes for decreasing utility of S.D. and C.V.

3. Write a note on application of Index number.

4. Find the matrix 2A + 3B – 4I, If ;

$$A = \begin{bmatrix} 1 & 3 \\ -2 & 4 \end{bmatrix} \text{ and } B = \begin{bmatrix} -2 & 5 \\ 3 & -4 \end{bmatrix}.$$

5. Evaluate the following determinant : $|A| = \begin{vmatrix} 2 & 1 & -1 \\ 3 & -2 & 2 \\ 1 & -3 & -3 \end{vmatrix}$.

6. Compute the arithmetic mean from the following :

x ÷	53	58	63	68	73	78
f ÷	10	22	44	14	08	02

P.T.O.

SECTION – B

*Answer **four**.* **(4×8=32)**

7. What are the important steps involved in constructing the cost of living Index numbers ?

8. For the following distribution of marks of students, find the median and mode :

Class	Frequency
10 – 19	08
20 – 29	19
30 – 39	29
40 – 49	36
50 – 59	25
60 – 69	13
70 – 79	04

9. Construct index numbers of price from the following data by applying :

   a) Laspeyres method

   b) Paasche method and

   c) Fisher's method.

Commodity	2012		2013	
	Price	Quantity	Price	Quantity
A	2	8	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

10. Compute standard deviation and its co-efficient for the following data :

Age (years)	No. of employees
20 – 25	170
25 – 30	110
30 – 35	80
35 – 40	45
40 – 45	40
45 – 50	30
50 – 55	25

11. If, $A = \begin{bmatrix} 2 & -1 \\ -1 & -2 \end{bmatrix}$ prove that $A^2 - 4A + 3I = 0$.

12. If $A = \begin{bmatrix} 3 & -1 & 3 \\ 1 & 2 & 3 \\ 6 & (x-5) & 6 \end{bmatrix}$ is a singular matrix. Find the value of x.

SECTION – C

Answer **two**.   **(2×16=32)**

13. Find the geometric mean and harmonic mean of the following distribution.

Daily wages (Rs.)	No. of workers
110 – 120	03
120 – 130	25
130 – 140	34

Daily wages (Rs.)	No. of workers
140 – 150	38
150 – 160	25
160 – 170	15
170 – 180	10

14. The data given below are the values of shares of two companies during 10 months. Decide which company's shares are more stable.

    A :   110   108   104   106   112   116   104   100   102   98

    B :   216   214   210   210   211   214   208   206   208   202

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

    $5x - 2y - 3z = 17$

    $3x - y + z = 15$

    $x + y - 6z = -13$

16. Using matrix method solve the equations :

    $x + 2y - 4z = -3$

    $2x + 6y - 5z = +2$

    $3x + 11y - 4z = -12.$

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