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BCMCMC 108**Credit Based I Semester B.Com. Degree Examination,****October/November 2017****COMMERCE (Common to all Batches)****Business Statistics and Mathematics (Paper – I)**

Time : 3 Hours

Max. Marks : 80

Instructions : 1) *Non programmable calculators may be used.*2) *Logarithm tables are supplied on request.*3) *Working notes shall be shown wherever necessary.***SECTION – A**Answer **any four** of the following questions :**(4×4=16)**

1. Define "Average". What are the desirable qualities of an ideal average. 4
2. Define standard deviation and co-efficient of variation. Mention their uses in statistical analysis. 4
3. What are the uses of Index numbers ? 4
4. Find the matrix $2A + 3B - 4I$ if $A = \begin{bmatrix} 1 & 3 \\ -2 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} -2 & 5 \\ 3 & -4 \end{bmatrix}$. 4
5. The mean wage of 100 labourers working in a factory running two shifts of 60 and 40 workers respectively is Rs. 3,800. The mean wage of 60 labourers working in the morning shift is Rs. 4,000. Find the mean wage of 40 labourers working in the evening shift. 4

6. If $A = \begin{pmatrix} 2 & 1 & -1 \\ 3 & -2 & 2 \\ 1 & -3 & -3 \end{pmatrix}$ and $B = \begin{pmatrix} 2 & -1 & 1 \\ 0 & 1 & 1 \\ 1 & 2 & 3 \end{pmatrix}$. Find $|A + B|$. 4

P.T.O.



SECTION – B

Answer any four :

(4×8=32)

7. Give the meaning of index numbers. What are the steps involved in the construction of index numbers ? 8

8. Compute Geometric mean and Harmonic mean from the following data : 8

Sales :	10	11	12	13	14	15	16	17	18
Number of days:	10	12	15	19	20	8	4	3	2

9. Calculate the standard deviation and coefficient of variation of the following data :

Marks	Number of students
20 – 29	5
30 – 39	12
40 – 49	15
50 – 59	20
60 – 69	18
70 – 79	10
80 – 89	6
90 – 99	4

10. Calculate Laspeyres and Paasche's index numbers from the table given below.

Commodity	Price (in ₹)		Expenditure (in ₹)	
	2013	2014	2013	2014
A	8	10	80	120
B	10	12	120	96
C	5	5	40	50
D	4	3	56	60
E	20	25	100	150



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

8

12. Solve the following equations by Cramer's rule.

8

$$8x - 2y + z = 7$$

$$2x + 3y + 2z = 14$$

$$3x + 3y + 4z = 21$$

SECTION - C

Answer any two of the following :

(2×16=32)

13. Find mean, median and mode from the following.

16

Rent Below	:	100	200	300	400	500	600	700	800
Number of Houses:		3	8	16	26	37	50	56	60

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

16

A	B
110	216
108	214
104	210
106	210
112	211
116	214
104	208
100	206
102	208
98	203



15. Solve the following equations by inverse matrix method.

16

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

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

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

16. Calculate the Fisher's index number from the following data :

16

Items	Base Year		Current Year	
	Price (₹)	Expenditure (₹)	Quantity	Expenditure (₹)
A	20	400	25	500
B	15	150	20	250
C	10	80	10	100
D	8	40	10	50
E	5	15	5	25