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BCMCMC 108

**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 :

$x \div$	53	58	63	68	73	78
$f \div$	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

Year	Share Price (Rs.)
2010	100
2011	102
2012	104
2013	106
2014	108
2015	110
2016	112
2017	116
2018	120
2019	125
2020	130

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 :

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

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

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