

Reg. No.

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**BCMCMC 158**

**Credit Based Second Semester B.Com. Degree Examination, April/May 2015**

**(2014-15 Batch Onwards)**

**COMMERCE**

**Business Statistics and Mathematics**

Time : 3 Hours

Max. Marks : 80

- Instructions :** 1) Non programmable calculators only are **allowed**.  
2) Working notes should be shown **whenever** needed.

**SECTION – A**

Answer **any four** questions :

**(4×4=16)**

1. How to interpret Beta factor in risk management when (i)  $\beta < 0$  (ii)  $\beta > 0$  (iii)  $0 < \beta < 1$  (iv)  $\beta > 1$  ?
2. Write the nature of seasonal variation and mention the factors which causes seasonal variation in time series.
3. Write the properties of regression coefficient.
4. Calculate the simple interest at 6% on a principal amounts of Rs. 1,500 for 6 months and 10 days.
5. In a bivariate data  $\sum x = 12.3$ ,  $\sum y = 213$ ,  $\sum x^2 = 15.76$ ,  $\sum y^2 = 3600$ ,  $\sum xy = 183$  and  $n = 16$ . Find the coefficient of correlation.
6. Find the amount of Rs. 500 lent for 2 years one month and 5 days at 16% p.a. compound interest payable half yearly.

P.T.O.



## SECTION - B

Answer **any four** questions :

(4×8=32)

7. The following are the marks in Accounts (x) and marks in Statistics (y) of 10 students in a class. Find the co-efficient of rank correlation.

x : 43   96   74   38   35   43   22   56   35   80

y : 30   94   84   13   30   18   30   41   48   95

8. The following are bivariate regression lines. Find the correlation coefficient between x and y and their means. Also calculate coefficient of determination and comment.

$$x + 2y - 5 = 10$$

$$2x + 3y - 8 = 10$$

9. Compute four yearly moving averages for the data

|                 |     |     |    |     |     |     |     |     |     |     |     |     |
|-----------------|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>Year :</b>   | 1   | 2   | 3  | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  |
| <b>Profit :</b> | 110 | 104 | 98 | 105 | 109 | 120 | 115 | 110 | 114 | 122 | 130 | 127 |

(Lakh Rupees)

10. Find the difference between compound and simple interest on ₹ 5,000 invested for 4 years at 8% per annum.

11. Find the equated due date of the following bills

Rs. 300 drawn on Feb. 10<sup>th</sup> for 3 months

Rs. 500 drawn on April 20<sup>th</sup> for 4 months

Rs. 800 drawn on June 15<sup>th</sup> for 2 months

Rs. 1,400 drawn on July 20<sup>th</sup> for 3 months.

12. The difference between true discount and Banker discount on a bill due after 6 months, discounted at 6% per annum is ₹ 27. Find the true discount, Bankers discount and face value, present value and discounted value of the bill.



SECTION – C

Answer any two questions :

(2×16=32)

13. For the following time series fit an equation of the type  $y = a + bx$

|                |   |      |      |      |      |      |      |      |      |
|----------------|---|------|------|------|------|------|------|------|------|
| <b>Year</b>    | : | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
| <b>Imports</b> | : | 103  | 106  | 95   | 93   | 98   | 93   | 90   | 86   |

(000' tons)

Find the trend values and estimate the import for the year 2016.

14. For the following data regarding age and number of children of 60 women, find the co-efficient of correlation.

| Age (years) | No. of Children |    |   |   |   |
|-------------|-----------------|----|---|---|---|
|             | 0               | 1  | 2 | 3 | 4 |
| 20-29       | 8               | 10 | 9 | 1 | - |
| 30-39       | 2               | 4  | 5 | 4 | - |
| 40-49       | 2               | 2  | 4 | 1 | 2 |
| 50-59       | -               | -  | 2 | 2 | 2 |

15. You are given the following data relating to aptitude scores and productivity index of 6 employees in a firm.

|                            |    |    |    |    |    |    |
|----------------------------|----|----|----|----|----|----|
| <b>Aptitude score:</b>     | 9  | 18 | 18 | 20 | 20 | 23 |
| <b>Productivity index:</b> | 33 | 23 | 33 | 42 | 29 | 32 |

- a) Fit two regression equations.
- b) Estimate the aptitude score of an employee whose productivity index is 30.
- c) Estimate the productivity index of an employee whose aptitude score is 25.

16. A bill for ₹ 1,712.75 was drawn on 3.4.2013 and made payable 3 months after date. It was discounted on 15-4-2013 at 16.5% per annum. What was the discounted value of the bill and how much has the banker gained on this transaction and also find the present value.

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