MBA (C) I/11.15.1081 Reg. No.

B

MBA (FT)/MBA (IB)/MBA (TT)/MBA (PT) DEGREE I SEMESTER EXAMINATION NOVEMBER 2015

SMS 2102/SMI 2102/SMT 2102/SMP 2102 QUANTITATIVE TECHNIQUES

(Regular and Supplementary)

Time: 3 Hours Maximum Marks: 50

PART A

(Answer *ALL* the questions)

(5× 2 = 10)

1. Define Geometric mean and harmonic mean.
2. What do you mean by rank correlation co-efficient? Write the formula to compute it.
3. Write a short note on the method of least squares.
4. Enumerate the major properties of normal distribution.
5. Define inverse of a matrix. How it is useful in solving a set of equations.

PART B

(Answer *ANY FIVE* questions)

(5 ×4 = 20)

6. For the three numbers 2, 4 and 8, find arithmetic mean (AM), Geometric mean (GM) and Harmonic Mean (HM) and prove that (AM) (HM) = $(GM)^2$.

7. Calculate the co- efficient of correlation from the following data.

X	1	2	3	4	5	6	7
Y	6	8	11	9	12	10	14

8. (a) 'Index numbers are economic barometers'. Comment on the statement.
   (b) Briefly explain the four components of a typical time series.

9. The mean height of 500 students at a certain school is 151 cm and the standard deviation is 15 cm. Assuming that the heights are normally distributed. Find how many students have heights
   (i) Between 119.5 and 155.5 cm (ii) more than 160 cm.

10. (a) State and briefly explain Baye's Theorem.
    (b) Enumerate the major properties of Poisson distribution.

11. If matrix A is Symmetric and matrix B is Skew-Symmetric, then show that p + q + x + y = 2; given that

$$A=\begin{bmatrix} 1 & p & -4 \\ 2 & 2 & 4 \\ q & 4 & 2 \end{bmatrix} \qquad B=\begin{bmatrix} 4 & -6 & x \\ y & 7 & 5 \\ 2 & -5 & 9 \end{bmatrix}$$

12. If matrix $AB=\begin{bmatrix} 22 & 6 \\ 11 & 3 \end{bmatrix}$ and matrix $A=\begin{bmatrix} 4 & 1 \\ 7 & 4 \end{bmatrix}$. Find matrix B.

(P.T.O.)

PART C
(Answer *ANY TWO* questions)

(2 × 10 = 20)

13. Find the standard deviation and co-efficient of variation of the marks of 150 students given in the following table.

Marks	Number of students	Marks	Number of students
1-10	5	51-60	22
11-20	12	91-70	15
21-30	20	71-80	6
31-40	25	81-90	4
41-50	40	91-100	1

14. Calculate the Laspeyre's and Paasche's inidex numbers for the year 2013, from the following date.

Commodity	Base year		Current year	
	Quantity (Kg)	Price (₹)	Quantity (Kg)	Price (₹)
A	10	0.80	11	0.70
B	8	0.85	9	0.90
C	5	1.30	5.5	0.80

15. Explain the methods of constructing index numbers. What are the problems faced in the construction of index numbers? Explain.

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