



PG – 806

I Semester M.B.A. (Day) Examination, February/March 2014  
(2007-08 Scheme)  
MANAGEMENT

Paper – 1.5 : Business Mathematics and Statistics

Time : 3 Hours

Max. Marks : 75

**Instructions :** \* Calculators and appropriate statistical tables are **allowed**.  
\* Provide the graph sheets.

SECTION – A

Answer **any six** of the following. **Each** sub-question carries **two** marks. **(6×2=12)**

1. a) Define "diagonal matrix".
- b) What do you mean by the term ratio ?
- c) What is dispersion ? Why is it important ?
- d) State the classical theory of probability.
- e) What is lag and lead in correlation ?
- f) Distinguish between point estimation and interval estimation.
- g) What is meant by ANOVA ?
- h) What are the business uses of index numbers ?

SECTION – B

Answer **any three** questions. **Each** question carries **eight** marks. **(3×8=24)**

2. Explain the role of Statistics in managerial decision-making. Illustrate with examples.
3. What is sampling ? Explain the different methods of sampling.

P.T.O.



4. The total cost and total revenue functions for a product are :

$$TC_{(x)} = 300 + 20x + 0.1x^2 \text{ and } TR_{(x)} = 60x.$$

Using the marginal approach, determine the profit maximizing level of output.  
What is the maximum profit ?

5. From the following data, find the straight line trend and forecast the production figures for the next two years of a certain company

Year	2006	2007	2008	2009	2010	2011	2012	2013
Production in '000 Kgs	64	70	82	68	75	88	90	94

A graph is necessary.

6. In a certain company training was provided to employees in interpersonal skills to avoid conflicts. From the following data determine whether the training was effective. You may use a 5 percent significance level :

Details	Involved in Conflicts	Not involved in Conflicts
Trained	884	425
Not trained	266	198

#### SECTION – C

Answer **any two** questions. **Each** question carries **12** marks.

**(2×12=24)**

7. Explain addition, subtraction, division and multiplication of matrices with examples.
8. Find the correlation coefficient and the regression equations for the following data :

<b>X</b>	12	24	30	45	56	70	83
<b>Y</b>	29	31	44	56	72	88	90

9. Construct Laspeyres, Paasche's and Fisher's ideal index for the following data and prove that Fisher's ideal index satisfies the time reversal and factor reversal tests.

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

**SECTION - D**  
**(Compulsory)**

**(1x15=15)**

10. The following represent the number of units of production per day turned out by four different workers using five different types of machines.

Workers	Machine Type				
	A	B	C	D	E
1	4	5	3	7	6
2	6	8	6	5	4
3	7	6	7	8	8
4	3	5	4	8	2

On the basis of this information, can it be concluded that

- a) The mean productivity is the same for different machines ? and
- b) The workers do not differ with regard to their productivity ?

You may use a 5 per cent significance level.

\_\_\_\_\_

\_\_\_\_\_