



I Semester M.B.A. (Day) Degree Examination, February/March 2013  
(2007-2008 Scheme)

MANAGEMENT

Paper – 1.5 : Business Mathematics and Analytics

Time : 3 Hours

Max. Marks : 75

SECTION – A

Answer any six questions. Each sub question carries two marks. (2×6=12)

1. a) What are matrices ?
- b) Define statistics.
- c) What is Baye's theorem.
- d) What is Poisson distribution ?
- e) What is decision making under risk ?
- f) What is Mann Whitney test ?
- g) What is meant by the secular trend ?
- h) What is kurtosis ?

SECTION – B

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

2. a) What is a measure of dispersion ? Discuss four important measures of spread indicating their uses.
- b) Following are the records of two players regarding their performance in cricket matches.

Score of Player A	48	52	55	60	65	45	63	70
Score of Player B	33	35	80	70	100	15	41	25

- i) Which player has scored more on an average ?
- ii) Which player is more consistent in his performance ?

P.T.O.



3. The owner of a solar heater is examining the number of solar homes started in the region in each of the last seven months. Develop the linear equation of trend by the method of least squares and find out the number of homes with solar heaters in April, May, June and July.

Month	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	March
<b>Number of Homes</b>	15	15	26	27	33	41	51

4. For the following contingency table :

- Construct a table of observed and expected frequencies.
- Calculate the Chi square statistic.
- State the Null and alternative hypothesis.
- Using 0.05 level of significance, derive the analysis.

The data given below is regarding in favour of, against and indifferent to a National Policy on FDI.

Occupation	Favour of	Against	Indifferent	Total
<b>Social Workers</b>	80	30	10	120
<b>Lawyers</b>	70	60	20	150
<b>University Students</b>	50	50	30	130
<b>Total</b>	200	140	60	400

5. a) A can solve 90 per cent of the problems given in a book and B can solve 70 per cent. What is the probability that at least one of them will solve a problem selected at random ?



- b) If the height of 300 students is normally distributed with mean 68 inches and standard deviation 2 inches, how many students have height.
  - a) Greater than 72 inches
  - b) Between 65 and 71 inches inclusive.
  
- 6. A manufacturing company produces four products A, B, C and D. Each product is made from raw materials P, Q and R. One unit of A requires 2 units of P, 1 unit of Q and 4 units of R. One unit of B requires 5 units of P and 3 units of R. One unit of C requires 4, 3 and 2 units of P, Q and R respectively and one unit of D requires 4, 1 and 2 units of P, Q and R respectively.

Find in matrix form :

- a) The total cost of materials consumed
- b) The total production cost
- c) Total sales and
- d) Total contribution.

SECTION – C

Answer **any two** questions. **Each** question carries **twelve** marks. **(2×12=24)**

- 7. Construct the cost of living index, calculate Fisher's ideal index and prove the time reversal and factor reversal tests for the following data :

Commodity	2010 Price	2010 Quantity	2011 Price	2011 Quantity
A	16	40	30	40
B	20	60	25	50
C	8	120	15	120
D	4	100	5	100
E	12	50	10	60



8. Perform ANOVA and decide whether the mean productivity is the same or differs among workers.

Workers	Machine Type			
	A	B	C	D
1	40	36	48	38
2	52	44	52	42
3	35	38	45	36
4	48	32	45	34
5	40	40	50	40

Test at significance levels of 5% and 1%.

9. Write short notes on the following :
- Process of testing a hypothesis.
  - Non Parametric tests
  - Decision Tree analysis
  - Importance of interpretation of statistical data in research.

SECTION – D

Compulsory case study.

(1×15=15)

10. A financial manager speculates the relationship between family incomes and their allocation for investment. You are required to calculate the coefficient of correlation for the given data and advise him regarding the significance of the calculated correlation.

Further calculate the estimating equations so that you can advise him on :

- The per cent allocation of investment that a family earning 25 lakhs annually would decide on and.
- What would be the probable annual income of a family allocating 18 percent for investment.

Annual Income in '00,000 Rs.	8	12	10	24	14	13	38	11	16
Per cent allocation for Investment	36	25	34	15	28	30	19	21	22