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MS-8

21812

MANAGEMENT PROGRAMME

Term-End Examination

June, 2010

MS-8 : QUANTITATIVE ANALYSIS FOR MANAGERIAL APPLICATIONS

Time : 3 hours | *Maximum Marks : 100*
(Weightage 70%)

Note :

(i) ***Section-A*** *has* ***six*** *questions, each carrying* **15** *marks. Attempt any* ***four*** *questions from this section.*

(ii) ***Section-B*** *is* ***compulsory*** *and carries* **40** *marks. Attempt both questions.*

(iii) Statistical tables may be supplied on request.

SECTION-A

1. A car is purchased for Rs. 300,000. If the depreciation for the first three years is at 10% per annum and for the next two years is at 20% per annum, then calculate the depreciated value of the car at the end of five years. **15**

2. Units A, B, C of a factory manufacture 25%, 35%, 40% respectively of the total cars. Out of their output, 5%, 4%, 2% defective cars came from the units A, B, C respectively. Using Baye's Theorem or otherwise, find the probability that a randomly selected car found defective has come from the unit A. **15**

3. Explain the term Random variable associated with an Experiment. Thereafter distinguish between discrete and continuous probability distributions also mentioning two discrete and two continuous distributions. **15**

4. Compute the Quartile Q_3, Decile D_5, Percentile P_{50} and interpret these values in lines 1 – 3 for the grouped data showing profits of 100 companies in a year in the table given below : **15**

Profit in lakh Rupees	**Number of Companies +**
20 – 30	20
30 – 40	10
40 – 50	15
50 – 60	15
60 – 70	40

5. The breaking strength X of cables in a factory has a normal distribution with a mean of $\mu = 1800$ lbs and a standard deviation of $\sigma = 100$ lbs. It is claimed that the breaking strength X can be increased by the introduction of a new technique in the manufacturing process. Should we accept the claim on the basis of a sample of 50 cables manufactured under the new technique; at a significance level of $\alpha = .05$ given that the mean breaking strength for the sample is $\overline{X} = 1850$ with the standard deviation remaining the same. (For convenience, we are giving the result P $(Z \leq 1.645) = .95$ where Z has the standard normal distribution N (0,1)). **15**

6. Write short notes on ***any three*** of the following topics : **15**

(a) Primary and secondary data

(b) Arithmetic Mean and Median of data

(c) Sample space associated with an experiment

(d) Linear function

(e) Sampling with and without replacement explaining them, mentioning their scope, drawing graphs and giving examples wherever possible.

SECTION-B

7. Using the method of least squares, find the regression equation of y on x for the data given in the Table below : **20**

x	1	2	3	4	5
y	5	7	9	10	11

And from the regression equation obtained, find the value of y corresponding to $x = 2.5$.

8. Solve the system of non-homogeneous linear equations : **20**

$$-x_1 + x_2 + 2\,x_3 = 2$$

$$3\,x_1 - x_2 + x_3 = 6$$

$$-x_1 + 3\,x_2 + 4\,x_3 = 4$$

by any one method out of cramar's rule, Inverse Matrix method, Gauss-Jordan method.