MANAGEMENT PROGRAMME
Term-End Examination
December, 2010
MS-8 : QUANTITATIVE ANALYSIS FOR MANAGERIAL APPLICATIONS

22903

Time : 3 hours

Maximum Marks : 100

(Weightage 70%)

Note :

(i) **Section-A** has 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 5,00,000. If the 15 depreciation for the first three years is at 20% per annum and for the next three years is at 40% per annum, then calculate the depreciated value of the car at the end of five years.

2. Units A, B, C of a Factory manufacture 25%, 35%, 15 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 B.

3. Explain Binomial and Normal Probability   **15**
   distributions. Mention the conditions under
   which a random variable having a binomial
   distribution with parameters n and p can be
   approximated to a random variable having a
   normal distribution with parameters μ and σ.

4. Compute the Quartile Q_2, Decile D_4, Percentile   **15**
   P_{60} 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 :

Profit in Lakh Rupees	Number of Companies f
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   **15**
   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 new technique, at a
   significance level of $\alpha = .01$ given that the mean
   breaking strength for the sample is $\bar{X} = 1810$ with

the standard deviation remaining the same. (For convenience, we are giving the result $P(Z \leq 2.33) = .99$ where Z has the standard normal distribution N (0, 1).)

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

   (a) Methods of collecting primary data

   (b) Range and Mode of data

   (c) Event associated with an experiment

   (d) Polynomial function

   (e) Stratified and Cluster sampling

SECTION - B

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

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

And from the regression equation obtained, find
the value of x corresponding to $y = 6$.

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

$$x + y - z = 9$$
$$8y + 6z = -6$$
$$-2x + 4y - 6z = 40$$

by any one method out of Cramer's rule. Inverse
matrix method, Gauss-Jordan method.

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