

1129
M. Tech. (Material Science and Technology)
First Semester
MST-105: Research Methodology

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:-
 - a) List various objectives of research.
 - b) Reason out why a research problem must be defined clearly.
 - c) Give the characteristics of research design which supports the testing of hypothesis
 - d) What do you understand by cluster sampling?
 - e) What is structured observation?

UNIT - I

- II. a) Give a brief account of different kinds of researches.
b) Discuss the research design for formulating researches. Give underlying basic principles of experimental research design. (2x5)
- III. Discuss various kinds of sampling designs after listing the criteria laid down to select a sampling procedure. (10)
- IV. What are different methods of primary data collection? Discuss the method of questionnaire used for data collection. What are its merits and demerits? (10)

UNIT - II

- V. Discuss the data collection by experimentation and observations. What are their merits and demerits? (10)
- VI. a) Suppose milk is sold at the rates of 1.80, 2.00, 2.20, 2.50 rupees per litre in four different months. Assuming that equal amount of money is spent on milk by a family in the four months, what will be the average price per litre.
b) The tabulation shown below depicts the number of peas in different pods. Determine the mean, median and mode of the following data.

No. of Peas (n)	1	2	3	4	5	6	7
Frequency (p)	4	33	76	50	26	8	1

(2x5)

P.T.O.

(2)

Sub. Code: 7855

- VII. A group of seven week old chickens reared on a high protein diet weigh 12, 15, 11, 16, 14, 14 and 16 ounces; a second group of five chickens similarly treated except that they received low protein diet weigh 8, 10, 14, 10 and 13 ounces. Test at 5% level whether there is significant evidence that additional protein has increased the weight of chickens. Use assumed mean (μ_1)=10 for sample of 7 and assumed, mean (μ_2) = 8 for sample of 5 chickens in your calculations. (10)

X-X-X