Branch : DoME **Semester** : 7th
Course Name: Design & Analysis of Experiments **Course Code** : ME-433
Time : 3.00 Hours **Total Marks** : 50

Note: Attempt all the questions.

1. Attempt all the questions. (5x2 =10 Marks)
(a) What is the relationship among Data Pattern, Data Structure and Distribution?
(b) How Mean, Median and Mode lead to measure Central Tendency?
(c) What is the relationship of Confidence Level with Standard Normal Probability Distribution?
(d) What is the importance of Hypothesis in research? What are Null and Alternate Hypothesis?
(e) What are Type 1 Error and Type 2 Error in Hypothesis?

2. Attempt all the questions. (5x2 =10 Marks)
(a) What will happen if experiments will not be performed in the research?
(b) What is the need of designing the experiments?
(c) According to you, 'Causal Research' is an applied Research or Basic Research? Justify with logics and examples?
(d) How will you relate Exploratory Research with Contrived & Non-Contrived Research, and with Cross-sectional and Longitudinal Research?
(e) What is the need to declare the 'Design of Experiment' to be Optimum?

3. Attempt all the questions. (5x2 =10 Marks)

(a) Why a Model is developed to analyse the experiments?
(b) Will you treat Simulation Model as a Deterministic or Stochastic Model? Justify your answer with needful logics.
(c) To develop a Predictive Model, is it mandatory that a models has to be Symbolic and Heuristic model? Justify your answer.
(d) What is the relationship among Simulation and Mathematical Model?
(e) What kind of a model will you apply to find optimal solution of a problem? Justify.

4. Attempt all the questions. (5x2 =10 Marks)

(a) What is the significance of contamination in experiments?
(b) How the contamination among experiments is being controlled?
(c) Does Ex-post Facto Research Design work on Randomization Principle or Sequential principle?
(d) What is the relationship among Independent Variables and Exogenous Variables? Explain?
(e) What is the difference among Quasi Experimental Research Design and Factorial Design? Explain with needful examples.

5. Attempt all the questions. (5x2 =10 Marks)

(a) What is the relationship among Exploratory Research and Confirmatory Research?
(b) What is the relationship among reliability and validity of data? What is the difference among Internal and External Validity?
(c) What is the difference among Dispersion, Variance and Standard Deviation?
(d) Why samples are selected from Population? Discuss the relationship among these two.
(e) What is the difference among Laboratory Experiments and Field Experiments?