Roll No……..….. **Total No. of Printed Pages: [01]**
Total No. of Questions: [11]

M. Tech ME (Semester – 1st)
RESEARCH METHODOLOGY
Subject Code: MREM0-101
Paper ID: [18191001]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It carries 16 marks. It consists of 4 questions of 4 marks each.
2. Section B consist of 4 questions of 8 marks each. The student has to attempt any 3 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(4 marks each)**

Q1. What is the significance of measures of dispersion in any research work?
Q2. What is data validation process? What are the different types of validation?
Q3. Distinguish between Parametric test and non-parametric test with illustrative example and applications.
Q4. Discuss the various steps in writing a business project report, citing examples. What is the importance of the chapter on bibliography and references?

Section – B **(8 marks each)**

Q5. Define Research Design. Describe briefly the various research designs.
Q6. Why does construct validity matter? What is construct validity in research? How do you determine construct validity?
Q7. Write short notes on any two of the following: a) T-test; b) Chi Square Test; c) Various graphical techniques of data analysis and presentation available in SPSS.
Q8. How do you perform discriminant analysis? How does discriminant analysis differ from ANOVA?

Section – C **(10 marks each)**

Q9. (a) What are the characteristics of a good research and components of a research proposal?
(b) What is Hypothesis? Draw a flow diagram for hypothesis testing.
Q10. (a) Discuss the methods for primary and secondary data collection.
(b) Explain the meaning of the following: a) Student's t distribution, b) One-tailed test and two-tailed test.
Q11. (a) What is the main difference between probability and probability sampling?
(b) What do you mean by Multivariate techniques? Explain their significance in context of research studies.