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Total No. of Questions: [11]

Total No. of Printed Pages: [01]

**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.