



Roll No:

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**MTECH**  
**(SEM I) THEORY EXAMINATION 2024-25**  
**RESEARCH PROCESS & METHODOLOGY**

TIME: 3 HRS

M.MARKS: 100

**Note:** Attempt all Sections. In case of any missing data; choose suitably.

## SECTION A

**1. Attempt all questions in brief. 2 x 07 = 14**

Q no.	Question
a.	What do you mean by research?
b.	Explain the significance and importance of research.
c.	What is the need of research design?
d.	What are the main elements of a research design?
e.	What do you mean by sampling?
f.	What are the objectives of chi-square test?
g.	What are the key differences between copyrights and patents?

## SECTION B

**2. Attempt any three of the following: 07 x 3 = 21**

a.	What problems encountered by researcher during the process of research? Explain in brief.
b.	What factors should be considered when choosing a research design? Explain in brief.
c.	What are the factors influencing the sample size? Explain in brief.
d.	What do you mean by 'Data'? Discuss various methods of collecting primary data with the help of relevant examples.
e.	What are the precautions are taken in preparing the research report? Explain in brief.

## SECTION C

**3. Attempt any one part of the following: 07 x 1 = 07**

a.	Write short notes on: (a) Applied Research; (b) Fundamental Research
b.	Explain the tools and techniques are used in analytical and experimental research.

**4. Attempt any one part of the following: 07 x 1 = 07**

a.	What are the types of research design? Differentiate between exploratory and descriptive research design.
b.	What is literature review and discuss the purpose of literature review.

**5. Attempt any one part of the following: 07 x 1 = 07**

a.	What is questionnaire? What are the precautions are considered in preparations of questionnaire. Also indicate its limitations.
b.	Distinguish between: (a) Restricted and unrestricted sampling; (b) Cluster and area sampling.

**6. Attempt any one part of the following: 07 x 1 = 07**

a.	Explain the meaning of analysis of variance (ANOVA). Write the steps for the analysis of variance for one-way classifications.
b.	Four machines A, B, C and D are used to produce a certain kind of cotton fabrics. Samples of size 4 with each unit as 100 square meters are selected from the outputs of the machines at random, and the number of flaws in each 100 square meters are counted, with the following results:



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	A	B	C	D
	11	7	12	16
	9	9	11	20
	14	10	18	23
	16	4	9	21

Do you think that there is a significant difference in the performance of the four machines?

7. Attempt any *one* part of the following:

07 x 1 = 07

a.	What do you mean by followings terms related to journal? (i) Indexing (ii) Impact factor (iii) Citation
b.	What are some strategies to avoid plagiarism and maintain academic integrity in research reporting?

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