

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech. (Integrated)

SEM: IX - THEORY EXAMINATION (2025 - 2026)

Subject: Research Process & Methodology

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of three Sections -A, B, & C. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

20

1. Attempt all parts:-

1-a. Motivation Research is a type of research. (CO1,K1) 1

- (a) Quantitative
- (b) Qualitative
- (c) Pure
- (d) applied

1-b. Identify the good research question from the following options. (CO1, K2) 1

- (a) To produce a report on student job searching behaviours
- (b) To identify the relationship between self-efficacy and student job searching behaviours
- (c) Students with higher levels of self-efficacy will demonstrate more active job searching behaviours
- (d) Do students with high levels of self-efficacy demonstrate more active job searching behaviours?

1-c. Identifying a research problem is essential because: (CO2, K2) 1

- (a) It guides the direction of the research
- (b) It eliminates the need for data collection
- (c) It makes the research process longer
- (d) It guarantees the research will succeed

1-d. Identifying the research problem allows (CO2, K2) 1

- (a) Faster data collection
- (b) Simplified statistical testing
- (c) Reduced complexity

- (d) Focus on relevant research questions
- 1-e. The most important advantage of sampling method of data collection is: (CO3, K3) 1
- (a) Increase accuracy
- (b) The only method of data collection
- (c) Save time
- (d) Easy to handle the data
- 1-f. Identify the ways in which random sampling is helpful in research (CO3,K4) 1
- (a) Reasonably accurate
- (b) An economical method of data collection
- (c) Free from personal biases
- (d) All of the above
- 1-g. The in which researcher is nurtured is a source of Hypothesis. (CO4,K2) 1
- (a) Caste
- (b) Community
- (c) Culture
- (d) Economy
- 1-h. Propositions which describe the characteristics are Hypothesis. (CO4, K3) 1
- (a) Descriptive
- (b) Imaginative
- (c) Relational
- (d) Variable
- 1-i. The Report submitted when there is a time lag between data collection and presentation of Result is called: (CO5, K4) 1
- (a) Thesis
- (b) Interim Report
- (c) Summary Report
- (d) Article
- 1-j. The first page of the research report is: (CO5, K3) 1
- (a) Appendix
- (b) Bibliography
- (c) Index
- (d) Title Page
2. Attempt all parts:-
- 2.a. List the objectives of doing research and state its types.(CO1 K1) 2
- 2.b. Explain how recognizing a research problem helps in planning and conducting a research study effectively.(CO2, K3) 2
- 2.c. Apply your understanding of sampling by explaining its meaning and illustrating situations in research where sampling is used.(CO3 K3) 2
- 2.d. Illustrate the meaning of statistical inference by applying it to a real-life situation.(CO4 k3) 2

- 2.e. Explain the meaning of a review article and a research article, highlighting the main differences between them. (CO5, K2) 2

SECTION-B 30

3. Attempt all parts:-

3.a. Answer any one of the following:-

- 3.a.(i) Apply the concept of research significance to a real-world situation by showing how research contributes to solving a current social, technological, or economic problem. Support your answer with suitable examples.(CO1 K3) 6

- 3.a.(ii) Write short notes on: (a) Conceptual Research (b) Empirical Research (c) Applied Research (d) Fundamental Research (CO1 K2) 6

3.b. Answer any one of the following:-

- 3.b.(i) Apply your understanding of the research process by explaining the role of formulating a hypothesis and illustrating its place within a study. CO2 K3 6

- 3.b.(ii) Assess the key factors that should be considered when choosing a research design and explain their significance in determining the effectiveness of a study. CO2 K4 6

3.c. Answer any one of the following:-

- 3.c.(i) Critically examine this statement in detail “Interviews introduce more bias than does the use of questionnaire”.CO3 K3 6

- 3.c.(ii) Determine the sample size necessary to estimate a population proportion to be within 0.03 with 99% confidence, assuming you have no knowledge of the approximate value of the sample proportion. (CO3, K4) 6

3.d. Answer any one of the following:-

- 3.d.(i) Critically evaluate the concepts of conceptual research and descriptive research, highlighting their objectives, methodologies, strengths, and limitations in contributing to knowledge development.CO4 K5 6

- 3.d.(ii) Using the following data, perform a Oneway Analysis of Variance using $\alpha = 0.05$. (CO4, K5) 6
Group 1: 51, 45, 33, 45, 67
Group 2: 23, 43, 23, 43, 45
Group 3: 56, 76, 74, 87, 56 Sample means for the groups: Group 1 = 48.2, Group 2 = 35.4, Group 3 = 69.8

- a) What is the decision?
b) Show the ANOVA table.

3.e. Answer any one of the following:-

- 3.e.(i) Examine the need for promoting and protecting Intellectual Property Rights in a developing economy. Provide suitable examples to support your answer. CO5 K4 6

- 3.e.(ii) Analyze the reasons behind the protection of Intellectual Property Rights (IPRs) and explain the impact of their protection on innovation, economic development, and fair competition. CO5 K4 6

SECTION-C 50

4. Answer any one of the following:-

- 4-a. Outline a methodology for conducting a survey on customer satisfaction in retail. (CO1, K4) 10

- 4-b. Propose a research problem to study the impact of renewable energy adoption. (CO1, K4) 10
5. Answer any one of the following:-
- 5-a. Construct strategies to ensure reliability and validity in research methodology, and provide examples demonstrating their application in designing a rigorous study. (CO2, K5) 10
- 5-b. Explain the process of interpreting findings and their significance in research. (CO2, K4) 10
6. Answer any one of the following:-
- 6-a. Categorize data types as primary or secondary for a study on renewable energy adoption. (CO3, K5) 10
- 6-b. Analyze ethical implications of using anonymous social media data for market research. (CO3, K4) 10
7. Answer any one of the following:-
- 7-a. Perform a Chi-Square test on a categorical dataset of a cricket match using statistical software. (CO4, K5) 10
- 7-b. Critique the differences in outputs between cluster analysis and factor analysis in segmentation studies. (CO4, K4) 10
8. Answer any one of the following:-
- 8-a. Compare different referencing styles for writing academic research papers. (CO5, K5) 10
- 8-b. Draft a patent application for an innovative wearable health monitoring device. (CO5, K5) 10