

K. J. Somaiai Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

May-June 2025

(M. Tech.) Program: Artificial Intelligence Scheme II

Regular Examination: M.Tech. Semester: II

Course Code: PCEILC2056 and Course Name: Research Methodology

Date of Exam: 11.06.2025

Duration: 02.5 Hours

Max. Marks: 60

Instructions:

- (1) All questions are compulsory.
- (2) Draw neat diagrams wherever applicable.
- (3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Define research. Explain the essential elements that constitute a good research definition.		CO1	2
b)	Distinguish between probability and non-probability sampling techniques. Give one example of each.		CO2	2
c)	Describe the key steps involved in formulating a well-defined research problem.		CO3	2
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Identify and explain at least three major issues or problems commonly faced in conducting research. Suggest possible solutions for each.		CO1	3
b)	Describe the key steps involved in formulating a well-defined research problem.		CO3	2
c)	Define research design. Why is a well-structured research design important in the research process?		CO2	2
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Examine the characteristics of scientific research. Discuss how ignoring any one of these systematic, valid, verifiable, empirical, or critical can compromise the integrity of research.		CO1	2
b)	Discuss the essential characteristics of a good sampling design. How can these essentials help in minimizing bias and improving the accuracy of research?		CO2	2

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c)	Compare and contrast the use of primary and secondary data in research.		CO3	3
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Critically discuss the various objectives of research. How do these objectives influence the formulation of research questions and design?		CO1	2
b)	Illustrate the difference between Research Method and Research Methodology.		CO3	3
c)	Explain the concept of validity testing in research. Evaluate how different types of validity contribute to the trustworthiness of research findings.		CO4	2
