Reg. No.																

Question Paper Code	14644

M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Third Semester

M.E. - CAD/CAM

24PCDPC301 - RESEARCH METHODOLOGY

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART – A (i) (MCQ)
(16 × 1 = 16 Marks)
Answer ALL Questions

		Marks	K – Level	CO
1.	Classify the type of research that aims at finding solutions to immediate problems. a) Fundamental research b) Analytical research c) Applied research d) Historical research	1	K2	CO1
2.	Select the characteristic of good research. a) Biased interpretation b) Systematic approach c) Personal opinion d) Random conclusions	1	K3	CO1
3.	Interpret the significance of research. a) Increasing confusion b) Improving knowledge and decision making c) Avoiding innovation d) Reducing scientific development	1	K2	CO1
4.	Select the benefit of reviewing existing literature. a) Improving research methodology b) Avoiding theoretical study c) Delaying the research work d) Reducing accuracy	1	K3	CO2
5.	Outline the meaning of research design. a) A method of publishing reports b) A financial statement c) A plan for conducting research systematically d) A type of literature survey	1	K2	CO2
6.	Show the purpose of developing a conceptual framework. a) To establish relationships among research variables b) To increase personal bias c) To avoid reviewing literature d) To replace research objectives	1	K2	CO2
7.	Identify the survey method that studies every unit of the population. a) Sample survey b) Census survey c) Random survey d) Pilot survey	1	K3	CO3
8.	Name the scaling technique used to represent objects in multidimensional space. a) Ratio scaling b) Comparative scaling c) Multidimensional scaling d) Rank scaling	1	K1	CO3
9.	Infer the factor considered while selecting a data collection method. a) Nature and objective of the study b) Availability of entertainment facilities c) Personal preference only d) Color of questionnaire	1	K2	CO3
10.	Apply Type I error with Type II error. a) Type I error rejects a true null hypothesis b) Both errors are identical c) Type II error rejects a true null hypothesis d) Type I error accepts a false null hypothesis	1	K3	CO4

11.	Identify the Chi-square test used to determine association between attributes. a) Test of goodness of fit b) Test for variance c) Test of independence of attributes d) Test for means	*1*	*K3*	*CO4*
12.	Apply the condition necessary for applying the Chi-square test. a) Adequate sample size and independent observations b) Absence of expected frequencies c) Negative frequencies d) Dependent observations only	*1*	*K3*	*CO4*
13.	What is the importance of oral presentation in research. a) It helps communicate findings directly to the audience b) It avoids interpretation of data c) It replaces report writing completely d) It reduces research validity	*1*	*K1*	*CO5*
14.	What is the meaning of mechanics of report writing? a) Laboratory testing procedure b) Sampling method selection c) Rules related to style, grammar, and formatting d) Hypothesis formulation technique	*1*	*K1*	*CO5*
15.	Match interpretation with report writing. a) Interpretation provides meaning to the findings presented in the report b) Report writing avoids interpretation c) Interpretation replaces report writing d) Both are unrelated activities	*1*	*K1*	*CO5*
16.	What is the purpose of references in a research report? a) Avoiding plagiarism checks b) Replacing conclusions c) Increasing grammatical errors d) Acknowledging the sources of information used	*1*	*K1*	*CO5*

PART – A (ii) (Short Answer Questions)
(8 × 3 = 24 Marks)
Answer ALL Questions

17.	Classify the various research approaches used in scientific investigations.	*3*	*K4*	*CO1*
18.	Develop the characteristics and criteria of good research.	*3*	*K3*	*CO1*
19.	Organize the importance of literature review in enabling research findings.	*3*	*K3*	*CO2*
20.	Identify the need for research design.	*3*	*K3*	*CO2*
21.	Distinguish between sample survey and census survey.	*3*	*K4*	*CO3*
22.	Develop the steps involved in the procedure of hypothesis testing.	*3*	*K3*	*CO4*
23.	Build the importance of the test of goodness of fit.	*3*	*K3*	*CO4*
24.	Analyze the role of oral presentation in communicating research findings.	*3*	*K4*	*CO5*

PART - B (Descriptive Answer Questions)
(5 × 12 = 60 Marks)
Answer ALL Questions

25.	a) (i) Build the objectives of research and their significance in knowledge creation.	*6*	*K3*	*CO1*
	(ii) Classify different types of research with suitable examples.	*6*	*K3*	*CO1*
	OR			
	b) (i) Apply the techniques involved in defining a research problem effectively.	*6*	*K3*	*CO1*
	(ii) Construct the problem statement of a research problem with assumptions.	*6*	*K3*	*CO1*

26.	a)	Apply the guidelines and techniques for writing an effective literature review.	*12*	*K3*	*CO2*
		OR			
	b)	Illustrate the basic principles of experimental design with suitable examples.	*12*	*K3*	*CO2*
27.	a)	Distinguish between sampling errors and non-sampling errors with suitable examples.	*12*	*K3*	*CO3*
		OR			
	b)	Classify different types of measurement scales and explain their characteristic.	*12*	*K3*	*CO3*
28.	a)	Analyze the hypothesis testing procedure for the difference between two proportions.	*12*	*K4*	*CO4*
		OR			
	b)	Examine the cautions to be followed while using Chi-square tests in statistical studies.	*12*	*K4*	*CO4*
29.	a)	Examine the precautions for interpreting research findings and explain the techniques used for interpretation.	*12*	*K4*	*CO5*
		OR			
	b)	Evaluate the mechanics of writing a research report and describe the precautions and ethical considerations to be followed while writing research reports.	*12*	*K4*	*CO5*