



## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Second Semester, M. Tech - Civil Engineering (MCAD)

Semester End Examination; October - 2023

**Research Methodology and IPR**

Time: 3 hrs

Max. Marks: 100

**Note:** I) PART - A is compulsory. Two marks for each question.

II) PART - B: Answer any Two sub questions (from a, b, c) for a Maximum of 18 marks from each unit.

III) Chi-square test charts are allowed.

Q. No.	Questions	Marks	BLs	COs	POs
<b>I : PART - A</b>		<b>10</b>			
1 a.	Mention the types of research.	2	L1	CO1	PO1,2
b.	Mention the objectives of literature review for a research.	2	L1	CO2	PO1,2
c.	Mention the types of sampling design.	2	L1	CO3	PO2
d.	List the Limitations of the Tests of Hypothesis.	2	L1	CO4	PO2
e.	Define Patent.	2	L1	CO4	PO2
<b>II : PART - B</b>		<b>90</b>			
<b>UNIT - I</b>		<b>18</b>			
2 a.	Write the meaning of research briefly. Mention four objectives of research.	9	L1	CO1	PO2
b.	Explain with short note on the criteria of good research.	9	L2	CO1	PO2
c.	Describe different technique involved in defining a problem.	9	L2	CO1	PO1
<b>UNIT - II</b>		<b>18</b>			
3 a.	Define research design. Explain the need for the research design and also enlist the features of good research design.	9	L2	CO2	PO1
b.	Explain the steps involved in conducting a research literature review.	9	L2	CO2	PO2
c.	Mention any six scaling techniques. Write the meaning of 'Arbitrary scale'. Also mention one merit and one demerit.	9	L2	CO2	PO2
<b>UNIT - III</b>		<b>18</b>			
4 a.	State the characteristics of a good sampling design.	9	L1	CO3	PO1
b.	What do you mean by 'sample design'? Explain the main steps of sample design.	9	L2	CO3	PO1
c.	Give the methods for collecting the primary data.	9	L1	CO3	PO1

**UNIT - IV**

**18**

- 5 a. What is a hypothesis? Give any five basic concepts of testing the hypothesis.
- b. Give a flow diagram for testing the hypothesis.
- c. Find the chi-square value and verify the die unbiased when it is thrown 132 times and the following results are obtained.

9 L2 CO4 PO2

9 L2 CO4 PO2

Number Turned Up	1	2	3	4	5	6
Frequency	16	20	25	14	29	28
Expected Frequency	22	22	22	22	22	22

9 L3 CO4 PO2

**(Given  $X^2 = 11.07$  for 5 df)**

**UNIT - V**

**18**

- 6 a. State the steps in writing the report.
- b. Discuss briefly on:
  - i) Copyright
  - ii) Trademark
  - iii) Geographical Indication
- c. Narrate in brief the importance and protection of Intellectual Property Rights (IRPs).

9 L1 CO4 PO1

9 L2 CO4 PO1

9 L2 CO4 PO2

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