

U.S.N.

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations**Programme: B.E.****Branch: Mechanical Engineering****Course Code: 23ME5AEREM****Course: Research Methodology****Semester: V****Duration: 3 hrs.****Max Marks: 100**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.			UNIT - I	CO	PO	Marks
	1	a)	Define Research Methodology. Differentiate between Research Methods and Research Methodology.	CO2	PO4	08
		b)	Describe various stages of research from a mechanical engineering perspective.	CO2	PO4	08
		c)	Brief overview of the research plan with an appropriate example.	CO2	PO4	04
			OR			
	2	a)	Discuss the characteristics of good research with suitable example.	CO2	PO4	08
		b)	Differentiate descriptive and analytical research, providing an appropriate example.	CO2	PO4	08
		c)	Define empirical research with suitable example.	CO2	PO4	04
			UNIT - II			
	3	a)	Discuss in detail the procedure of selecting a research problem.	CO2	PO4	08
		b)	Brief the sources for literature search, including a relevant example.	CO2	PO4	08
		c)	Describe the formulation of the problem statement.	CO2	PO4	04
			OR			
	4	a)	Describe the process involved in developing a working hypothesis in research problem.	CO2	PO4	08
		b)	Discuss the various stages of literature review. Mention its importance.	CO2	PO4	08
		c)	Define variables. Describe the types of variables.	CO2	PO4	04

		UNIT - III			
5	a)	Justify the statements: i) The quality of a journal is not solely determined by its impact factor. ii) Impact factor of journals is essential.	CO2	PO4	08
	b)	Illustrate the details of H- index and how to calculate it.	CO2	PO4	08
	c)	Describe the effective methods for writing a research report.	CO2	PO4	04
		OR			
6	a)	Outline the best practices and common pitfalls to avoid when drafting a manuscript for journal publication.	CO2	PO4	08
	b)	Elucidate the significance of citation database for publication aspects.	CO2	PO4	08
	c)	Describe the characteristics of weak Manuscript.	CO2	PO4	04
		UNIT - IV			
7	a)	Elucidate the strategic procedure of patent filing process.	CO2	PO4	08
	b)	List the non-patentable entities according to the Indian patent law.	CO2	PO4	08
	c)	Classify the types of patents.	CO2	PO4	04
		OR	CO2	PO4	
8	a)	Brief about the importance and protection of intellectual property rights.	CO2	PO4	08
	b)	Describes the nature of intellectual property rights.	CO2	PO4	08
	c)	Discuss the function of intellectual property in international cooperation.	CO2	PO4	04
		UNIT - V			
9	a)	Describe the detail procedure for obtaining patent in India.	CO2	PO4	08
	b)	Describe the importance of Intellectual property rights.	CO2	PO4	08
	c)	Discuss the significance of federal registration of trademarks.	CO2	PO4	04
		OR	CO2	PO4	
10	a)	Designate the principles underlying the patent law in India.	CO2	PO4	08
	b)	Describe the details of trade mark and their importance.	CO2	PO4	08
	c)	Discuss the needs of patenting work.	CO2	PO4	04
