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

Autonomous Institute Affiliated to VTU

## June 2025 Semester End Main Examinations

**Programme: B.E.**

**Semester: V**

**Branch: Mechanical Engineering**

**Duration: 3 hrs.**

**Course Code: 23ME5AEREM**

**Max Marks: 100**

**Course: Research Methodology**

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

<b>UNIT - I</b>			<b>CO</b>	<b>PO</b>	<b>Marks</b>
1	a)	Define Research Methodology. Differentiate between Research Methods and Research Methodology.	CO2	PO4	<b>08</b>
	b)	Describe various stages of research from a mechanical engineering perspective.	CO2	PO4	<b>08</b>
	c)	Brief overview of the research plan with an appropriate example.	CO2	PO4	<b>04</b>
<b>OR</b>					
2	a)	Discuss the characteristics of good research with suitable example.	CO2	PO4	<b>08</b>
	b)	Differentiate descriptive and analytical research, providing an appropriate example.	CO2	PO4	<b>08</b>
	c)	Define empirical research with suitable example.	CO2	PO4	<b>04</b>
<b>UNIT - II</b>					
3	a)	Discuss in detail the procedure of selecting a research problem.	CO2	PO4	<b>08</b>
	b)	Brief the sources for literature search, including a relevant example.	CO2	PO4	<b>08</b>
	c)	Describe the formulation of the problem statement.	CO2	PO4	<b>04</b>
<b>OR</b>					
4	a)	Describe the process involved in developing a working hypothesis in research problem.	CO2	PO4	<b>08</b>
	b)	Discuss the various stages of literature review. Mention its importance.	CO2	PO4	<b>08</b>
	c)	Define variables. Describe the types of variables.	CO2	PO4	<b>04</b>

**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.

<b>UNIT - III</b>					
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	<b>08</b>
	b)	Illustrate the details of H- index and how to calculate it.	CO2	PO4	<b>08</b>
	c)	Describe the effective methods for writing a research report.	CO2	PO4	<b>04</b>
<b>OR</b>					
6	a)	Outline the best practices and common pitfalls to avoid when drafting a manuscript for journal publication.	CO2	PO4	<b>08</b>
	b)	Elucidate the significance of citation database for publication aspects.	CO2	PO4	<b>08</b>
	c)	Describe the characteristics of weak Manuscript.	CO2	PO4	<b>04</b>
<b>UNIT - IV</b>					
7	a)	Elucidate the strategic procedure of patent filing process.	CO2	PO4	<b>08</b>
	b)	List the non-patentable entities according to the Indian patent law.	CO2	PO4	<b>08</b>
	c)	Classify the types of patents.	CO2	PO4	<b>04</b>
	<b>OR</b>			CO2	PO4
8	a)	Brief about the importance and protection of intellectual property rights.	CO2	PO4	<b>08</b>
	b)	Describes the nature of intellectual property rights.	CO2	PO4	<b>08</b>
	c)	Discuss the function of intellectual property in international cooperation.	CO2	PO4	<b>04</b>
	<b>UNIT - V</b>				
9	a)	Describe the detail procedure for obtaining patent in India.	CO2	PO4	<b>08</b>
	b)	Describe the importance of Intellectual property rights.	CO2	PO4	<b>08</b>
	c)	Discuss the significance of federal registration of trademarks.	CO2	PO4	<b>04</b>
	<b>OR</b>			CO2	PO4
10	a)	Designate the principles underlying the patent law in India.	CO2	PO4	<b>08</b>
	b)	Describe the details of trade mark and their importance.	CO2	PO4	<b>08</b>
	c)	Discuss the needs of patenting work.	CO2	PO4	<b>04</b>

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