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B.M.S.College of Engineering, Bengaluru-560019**Autonomous Institute Affiliated to VTU****January / February 2025 Semester End Main Examinations****Programme: B.E.****Branch: Biotechnology****Course Code: 23BT5AERMI****Course: Research Methodology & IPR****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 and list its characteristics.	CO1	PO10	6
		b)	Identify errors that might occur when selecting a research problem in a given scenario.	CO1	PO10	7
		c)	Assess the criteria for good research with examples.	CO1	PO10	7
			OR			
	2	a)	List various sources of research problems.	CO1	PO10	6
		b)	Demonstrate how to develop a research plan for a given topic.	CO1	PO10	8
		c)	Critique a poorly defined research problem and suggest improvements.	CO1	PO10	6
			UNIT - II			
	3	a)	Discuss the necessity of defining a research problem.	CO2	PO10	7
		b)	Illustrate how a literature review helps in defining a research problem.	CO2	PO10	7
		c)	Evaluate the effectiveness of various data collection methods in a biotechnology research project.	CO2	PO10	6
			OR			
	4	a)	Explain the importance of instrumentation in experimental research.	CO2	PO10	5
		b)	Apply systematic literature review methods to identify gaps in a chosen research area.	CO2	PO10	6
		c)	Assess the challenges faced during data collection in field studies.	CO2	PO10	9

		UNIT - III			
5	a)	Describe the importance of references in academic writing.	CO2	PO10	6
	b)	Prepare a sample poster for a conference presentation.	CO2	PO10	6
	c)	Critically evaluate the journal selection process for publishing research.	CO2	PO10	8
		OR			
6	a)	Summarize the process of reviewing a journal article.	CO2	PO10	6
	b)	Create a template for a research paper submission.	CO2	PO10	6
	c)	Define plagiarism and explain its ethical implications.	CO2	PO10	8
		UNIT - IV			
7	a)	Explain the criteria for patentability with examples from biotechnology.	CO3	PO8, 12	7
	b)	Compare broad and narrow patent claims with case studies.	CO3	PO8, 12	7
	c)	Critique a patent claim based on its novelty, utility, and inventive step.	CO3	PO8, 12	6
		OR			
8	a)	Discuss the significance of compulsory licensing in biotechnology.	CO3	PO8, 12	7
	b)	Illustrate a case study showcasing successful patenting in biotechnology.	CO3	PO8, 12	7
	c)	Propose a framework for verifying claims in a biotechnology patent application.	CO3	PO8, 12	6
		UNIT - V			
9	a)	List different forms of intellectual property in biotechnology.	CO4	PO8, 12	6
	b)	Demonstrate the process of patenting genetically modified organisms (GMOs).	CO4	PO8, 12	6
	c)	Evaluate the commercial potential of a biotechnology innovation.	CO4	PO8, 12	8
		OR			
10	a)	Identify key early patents granted in biotechnology.	CO4	PO8, 12	7
	b)	Illustrate the importance of UPOV 1991 in plant variety protection.	CO4	PO8, 12	7
	c)	Elaborate on the impact of R&D investments on the success of biotechnology innovations.	CO4	PO8, 12	6
