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. **Semester: VI**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 23BT6OEBTE / 22BT6OEBTE **Max Marks: 100**
Course: Battery Technology

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.

				CO	*PO*	Marks
			UNIT – I			
1	a)	Explain the various electrochemical parameters of batteries		*CO* 1	*PO1*	**10**
	b)	Differentiate between battery modules and stacks.		*CO* 1	*PO1*	**10**
			OR			
2	a)	Classify the batteries and explain with suitable examples.		*CO* 1	*PO1*	**10**
	b)	Explain the salient features of life cycle of batteries.		*CO* 1	*PO1*	**10**
			UNIT – II			
3	a)	With a neat diagram explain the working principle of zinc carbon battery.		*CO* 1	*PO1*	**10**
	b)	Tabulate the characteristics and advantages of primary lithium batteries.		*CO* 1	*PO1*	**10**
			OR			
4	a)	Tabulate the general characteristics and applications of primary batteries.		*CO* 1	*PO1*	**10**
	b)	Summarize the advantages of zinc-air and zinc-MnO_2 batteries.		*CO* 1	*PO1*	**10**
			UNIT - III			
5	a)	Explain the construction, working principle, and applications of nickel metal hydride battery.		*CO* 1	*PO1*	**10**
	b)	Elucidate on different types of cathode materials used in lithium-ion batteries.		*CO* 1	*PO1*	**10**
			OR			

	6	a)	Explain the construction, working principle, and applications of lead acid battery.	*CO* 1	*PO1*	**10**
		b)	Differentiate between vanadium redox flow battery and lithium ion battery.	*CO* 1	*PO1*	**10**
			UNIT – IV			
	7	a)	What are fuel cells? Explain the construction and working principle of alkaline fuel cell.	*CO* 1	*PO1*	**12**
		b)	Explain the industrial application of polymer electrolyte fuel cells.	*CO* 1	*PO1*	**08**
			OR			
	8	a)	How solid oxide fuel cell (SOFC) is different from methanol fuel cell? Explain the construction working of SOFC in detail.	*CO* 1	*PO1*	**12**
		b)	Explain the characteristics and applications of phosphoric acid fuel cells.	*CO* 1	*PO1*	**08**
			UNIT – V			
	9	a)	Elucidate on preventive measure to be considered while handing secondary batteries.	*CO* 1	*PO1*	**10**
		b)	What is battery management system? Explain its primary function in detail.	*CO* 1	*PO1*	**10**
			OR			
	10	a)	"Though the use of lithium ion batteries (LIBs) in EVs ease off our reliance on fossil fuels, electronic waste generated from the LIBs are big concern to the world". Justify the statement by discussing the environmental impact on LIBs.	*CO2*	*PO3*	**10**
		b)	Describe the safety measures need to be taken while handling LIB modules and stacks.	*CO2*	*PO2*	**10**

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