PVP 23

Code: 23EE6401

II B.Tech - II Semester – Honors Examinations - MAY 2025

BATTERY MANAGEMENT SYSTEM

(HONORS in ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1.a)	Differentiate between a cell and a battery.	L2	CO1
1.b)	List the type of battery geometry.	L1	CO1
1.c)	Distinguish between positive and negative plates of a lead acid battery.	L3	CO1
1.d)	Explain the internal resistance of a Lead Acid battery.	L3	CO2
1.e)	Sketch the discharge process of a Sodium Metal Chloride Battery.	L3	CO2
1.f)	Compare and contrast NiCd and Li Ion Battery with respect to the voltage.	L4	CO2
1.g)	Discuss the charging infrastructure.	L3	CO3
1.h)	List the disadvantages of fast charging.	L4	CO3
1.i)	Define charge equalization.	L1	CO3
1.j)	List the power levels of inductive charging	L1	CO3

PART – B

			BL	CO	Max. Marks
UNIT-I					
2	a)	Discuss the term energy stored in a battery with relevant diagrams.	L3	CO1	5 M
	b)	Describe the need for cooling methods in a battery.	L2	CO1	5 M
OR					
3	a)	Explain the concept of self-discharge of batteries with a neat diagram.	L4	CO1	5 M
	b)	Discuss the advantages and disadvantages of cylindrical cells.	L3	CO1	5 M
UNIT-II					
4	a)	Illustrate the characteristics of Nickel Cadmium batteries.	L3	CO2	5 M
	b)	Explain the Nickel Hydride Battery.	L2	CO2	5 M
OR					
5		Differentiate between Nickel and Lead Acid Batteries.	L2	CO2	10 M
UNIT-III					
6		Discuss the working of a Sodium Sulphur battery with neat diagrams and relevant equations.	L3	CO2	10 M
OR					
7		Compare and contrast between Sodium Sulphur and Sodium Metal Battery.	L3	CO2	10 M

UNIT-IV					
8	a)	Explain the power level at domestic charging with relevant equations and diagrams.	L2	CO3	5 M
	b)	Discuss the charging station with a circuit diagram.	L3	CO3	5 M
OR					
9		Explain the advantages and disadvantages of battery swapping.	L3	CO3	10 M
UNIT-V					
10		Discuss the need for soft switching of power electronic components in inductive charging.	L3	CO3	10 M
OR					
11		Discuss the microprocessor-based charging circuit.	L3	CO3	10 M