Reg. No. : | | | | | | | | | | | | |

Question Paper Code: R8367

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2025

One credit course

Electrical and Electronics Engineering

R21UEE867-ENERGY STORAGE SYSTEMS

(Regulations R2021)

Duration: 1.30 Hours | Maximum: 50 Marks

Answer All Questions

PART A - (5 x 2 = 10 Marks)

1.	Explain the necessity of energy storage in electric vehicles.	CO1-U	
2.	Summarize the role of battery management in maintaining efficiency of renewable energy systems.	CO1-U	
3.	Name two factors that influence battery cycle life.	CO2-Ana	
4.	State the effect of temperature on battery efficiency.	CO2-Ana	
5.	Explain the importance of energy storage in integrating solar and wind power.	CO1-U	

PART – B (2 x 20= 20 Marks)

6.	(a)	Summarize the need for electrical energy storage in modern power systems and interpret its role in Battery Management Systems (BMS).	CO1-U	(20)
		Or		
	(b)	Illustrate the role of BMS in ensuring safety, efficiency, and reliability of stored energy with suitable examples	CO1-U	(20)
7.	(a)	Analyze the impact of temperature variations on the efficiency, performance, and lifespan of lead-acid, Li-ion, and NiMH batteries, explaining the factors that cause differences in their thermal behavior.	CO2-Ana	(20)
		Or		
	(b)	Analyze the characteristics of supercapacitors and batteries in hybrid energy storage systems, examining how their differences in energy density, power density, and charge-discharge behavior affect overall system performance and efficiency	CO2-Ana	(20)