



R18 Regulation

Subject code:206BA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Supplementary Examinations, December 2024

Energy Storage Systems (EEE)

Maximum Marks: 70

Date:09.01.2025

Duration: 3 hours

- Note:
- 1.This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20) Marks)		CO	Bloom Tx
1	What is Congestion in power grid?	1	L1
2	Define Round trip efficiency.	1	L1
3	What is energy storage capacity?	2	L1
4	Define cycling capacity of energy storage system.	2	L1
5	Write the main features of Flywheel energy storage system?	3	L1
6	Write the examples of Secondary batteries?	3	L1
7	What is advantage of Superconducting magnetic energy storage?	4	L1
8	Give the Technical comparison of EES technologies.	4	L1
9	Define Electric vehicles.	5	L1
10	Define Smart grid, smart micro grid.	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
11	What are the Characteristics of energy storage systems? [10M]	1	L2
OR			
12	Write a short note on Congestion in power grid? [10M]	1	L2
13	Write the various roles of electrical storage technologies from the viewpoint of consumers. [10M]	2	L2
OR			
14	Explain the various problems in renewable energy installation and give their possible solutions with neat block diagram. [10M]	2	L2
15	Explain following mechanical storage systems.	3	L2
	a) Pumped hydro storage [5M]		
	b) Compressed air energy storage [5M]		
OR			
16	Explain a) Lithium-ion battery (Li-ion) [3M]	3	L2

	b) Sodium Sulphur battery (NaS) [3M] c) Redox flow battery [4M]		
17	a) Explain Double-layer capacitors with neat sketch. [5M] b) Explain Thermal storage systems. [5M]	4	L2
	OR		
18	Explain superconducting magnetic energy storage (SMES) in detail. [10M]	4	L2
19	Explain Utility use (conventional power generation, grid operation & service) of Energy storage systems. [10M]	5	L2
	OR		
20	Explain the Consumer use (uninterruptable power supply for large consumers) of Energy storage systems. [10M]	5	L2