R18 Regulation *Subject code:2O6BA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Regular/Supplementary Examinations, June 2022

ENERGY STORAGE SYSTEMS

(EEE)

Maximum Marks: 70 Date:23.06.2022 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)

1 What are the characteristics of electricity with respect to EES?
2 What is congestion in power grids?
3 State the applications of EES in smart grid.
4 Write the major two roles of EES from the viewpoint of generators of renewable energy.
5 Compare the secondary battery and flow battery.
6 Classify the electrical energy storage systems according to energy form.
7 Compare classical capacitor and supercapacitor.
8 State the principle of superconducting energy storage.
9 Give examples of EES-relevant applications in the smart grid.
10 What is battery SCADA?

Part-B

Answer All the following questions. (5X10M=50Marks)

11 Discuss in detail about the role of EES technologies in electricity use. (10)

OR

12 A. Explain the need for continuous and flexible supply. (5)
B. Explain the peak demand variation with respect to time using daily load curve. (5)
13 A. Discuss the roles of EES from the viewpoint of utility. (5)
B. Discuss the roles of EES from the viewpoint of consumers. (5)

OR

14 Discuss in detail about the emerging needs for EES. (10)
15 With neat diagram, explain the compressed air energy storage system. (10)

OR

16 Explain the types of secondary batteries in detail. (10)
17 Discuss in detail about the thermal Storage Systems. (10)

OR

18 Explain the following electrical storage systems in detail with neat sketch
A. Double layer capacitor (5) B. Super conducting magnetic energy storage (5)
19 With example, explain the new trends of EES in renewable power generation. (10)

OR

20 Explain the architecture for EES applications in a smart microgrid. (10)