

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**SEVENTH SEMESTER B.TECH DEGREE EXAMINATION (R), DECEMBER 2023
ELECTRICAL AND ELECTRONICS ENGINEERING
(2020 SCHEME)****Course Code: 20EET495****Course Name: Control and Dynamics of Microgrids****Max. Marks: 100****Duration: 3 Hours****PART A*****(Answer all questions. Each question carries 3 marks)***

1. Explain the concept of micro grid structure with the help of block diagram.
2. Discuss the technical and economic advantages and disadvantages of micro grid.
3. Discuss about the need for energy storage in micro grids. List any three.
4. Explain the concept of pumped hydro storage system.
5. What are different power management techniques used in micro grids?
6. Discuss about the integration issues of micro grid in distributed generation.
7. Explain the distributed control scheme for micro grid architecture.
8. Explain v/f control for micro grid integrations.
9. Explain the basic concept of state space modeling.
10. Write a note on micro grid stabilizers.

PART B***(Answer one full question from each module, each question carries 14marks)*****MODULE I**

11. With neat diagrams, explain the architecture of AC, DC and Hybrid micro grids. (14)

OR

12. a) Discuss about the role of power electronic interface in micro grid structure. (7)
- b) Discuss about the challenges associated with implementing a micro grid. (7)

MODULE II

13. a) With neat figure, explain the fuel cell technology. List its advantages and disadvantages. (7)
- b) With neat figure, explain the compressed air energy storage technology. List its advantages and disadvantages. (7)

OR

14. a) With neat figure, explain the thermal energy storage technology. List its advantages and disadvantages. (7)
- b) With neat figure, explain the super capacitor energy storage technology. List its advantages and disadvantages. (7)

MODULE III

15. Describe the operation of AC and DC micro grid in grid connected mode and islanded mode. (14)

OR

16. a) Write note on fault ride through capability of micro grid. (5)
- b) Describe the power management operation in a microgrid. (9)

MODULE IV

17. Explain the coordinated control scheme for micro grids. (14)

OR

18. a) Explain the PQ control scheme for micro grids. (7)
- b) Explain the concept of centralized control in micro grids. (7)

MODULE V

19. Develop a state space model for a DC micro grid and discuss about the influence of system parameters on micro grid dynamics. (14)

OR

20. a) What are the influence of various parameters on micro grid stability. (6)
- b) Model a DC-DC converter for micro grid applications. (8)
