

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2024

(2020 SCHEME)

Course Code : 20EET396

Course Name: Operation and Control of Power Systems

Max. Marks : 100

Duration: 3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

1. Differentiate between Economic load dispatch and Unit commitment.
2. List out the different constraints that should be considered in unit commitment.
3. Explain the significance of take-or-pay fuel supply contract.
4. Describe the scheduling of energy with suitable example.
5. Explain the importance of interchange of power between utilities in energy markets.
6. Enlist the advantages and disadvantages of power pools.
7. Illustrate the necessity of conducting contingency analysis in power system.
8. Define cascading outage.
9. Explain the concept of maximum likelihood in state estimation.
10. List out the advantages of state estimation in power systems.

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Explain the first order gradient method of economic load dispatch problem. (7)
b) Explain base point and participation factors in power systems. (7)

OR

12. List the different methods of unit commitment solution. Explain any one method. (14)

MODULE II

13. a) Explain long range and short-range hydro scheduling. (7)
b) Explain any one method of short-term hydrothermal scheduling. (7)

OR

14. a) Explain any one method by which hydrothermal scheduling with storage limitation can be done. (7)
b) Explain pumped storage hydro plants. (7)

MODULE III

15. a) Describe interchange evaluation with unit commitment. (7)
b) Explain the different types of interchange contracts. (7)

OR

16. a) Explain the economy interchange between interconnected utilities. (8)
b) Explain the significance of energy banking. (6)

MODULE IV

17. Explain the contingency analysis using sensitivity factors by using suitable flow chart. (14)

OR

18. a) Describe the different factors affecting power system security. (7)
b) Explain the effects of transmission line outages in power systems. (7)

MODULE V

19. a) Explain the weighted least squares state estimation in power systems. (8)
b) Describe the detection and identification of bad measurements in state estimation. (6)

OR

20. a) Explain the estimation of un measured quantities. (7)
b) List and explain the applications of power system state estimation. (7)
