

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

First Semester

Power Systems Engineering

PPST2412 - Power System Operation and Control

Regulations - 2024

Duration : 3 Hrs

Maximum : 100 Marks

PART - A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	Questions	BLT	CO	Marks
1.	What is meant by spinning reserve?	L1	1	2
2.	State the factors affecting the load forecasting.	L1	1	2
3.	Why an integral control is added to Speed Governor System?	L2	2	2
4.	What is meant by tie-line bias control?	L1	2	2
5.	Why is hydrothermal coordination important in power generation?	L2	3	2
6.	How does pumped hydro storage help in peak load management?	L2	3	2
7.	Differentiate between unit commitment and economic dispatch.	L2	4	2
8.	What are the assumptions involved in dynamic programming method?	L1	4	2
9.	Define power system security.	L1	5	2
10.	What are the challenges associated with implementing BSCOPF?	L2	5	2

PART - B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a A power supply is having the following loads:	L3	1	16

Type of load	Maximum demand	Diversity factor of group	Demand factor
Domestic	10,000	1.2	0.8
Commercial	30,000	1.3	0.9
Industrial	50,000	1.35	0.95

If the overall system diversity factor is 1.5, determine:

- i) The maximum demand
- ii) Connected load of each type

Or

- | | | | | |
|---|--|----|---|----|
| b | Discuss the following: | L3 | 1 | 16 |
| | <ol style="list-style-type: none"> i. Load duration curve ii. Load factor iii. Diversity factor iv. Load curves v. Hot reserves | | | |

12.	a	Explain the static characteristics of the primary ALFC loop.	L2	2	16
		Or			
	b	Obtain the block diagram model of a two-area system and explain its key features.	L2	2	16
13.	a	Discuss the different types of hydroelectric plant models.	L3	3	16
		Or			
	b	Explain the concept of hydro-thermal scheduling with pumped hydro plants.	L3	3	16
14.	a	Formulate the unit commitment problem and explain all of its constraints.	L2	4	16
		Or			
	b	Derive the coordination equations for the Economic Dispatch problem with losses, and also provide the algorithm to solve the problem.	L2	4	16
15.	a	Describe the methodology used in contingency analysis.	L3	5	16
		Or			
	b	Discuss the formulation of the Bounding-Security Constrained Optimal Power Flow problem.	L3	5	16