

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

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

First Semester

Power Systems Engineering

PPST2411 - Computer Aided Power System Analysis

Regulations - 2024

Duration : 3 Hrs

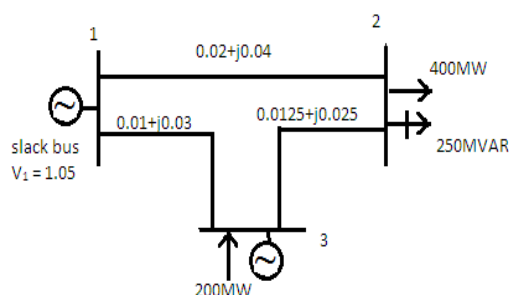
Maximum : 100 Marks

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

Q.No	Questions	BLT	CO	Marks
1.	Define sparse matrix.	L1	1	2
2.	Infer LU decomposition.	L2	1	2
3.	List the significance of PV bus.	L1	2	2
4.	Interpret the term sensitivity factor in power system.	L2	2	2
5.	Explain about the gradient vector.	L2	3	2
6.	What is bus incremental cost?	L1	3	2
7.	Define mutual coupling.	L1	4	2
8.	Summarize the significance of symmetrical components.	L2	4	2
9.	Compare steady state stability and transient stability.	L2	5	2
10.	Name the factors that influencing transient stability.	L1	5	2

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

Q.No	Questions	BLT	CO	Marks
11.	a Explain the various optimal ordering schemes for preserving sparsity with suitable examples. Or b Summarize Bifactorization and Gauss elimination methods.	L2	1	16
12.	a Figure shows the one-line diagram of a simple three bus system with generation at bus 1. The magnitude of voltage at bus 1 is adjusted to 1.05 p.u. The scheduled loads at buses 2 and 3 are given in the diagram. Line impedance are marked in p.u on a 100MVA base and the line charging susceptance are neglected. Using the NRLF method Conclude and evaluate the phasor values of the voltages at load buses 2 and 3(PQ buses) accurate to decimal places at the end of first iteration.	L4	2	16



Or

	b	Analyse and derive the Fast decoupled load flow technique with the solution procedure using a neat flow chart.	L4	2	16
13.	a	Recall and Explain the problem formulation of optimal power flow and its solution methodology using gradient method.	L2	3	16
		Or			
	b	What is security constrained optimal power flow and explain with neat flow chart?	L2	3	16
14.	a	A synchronous generator and synchronous motor each rated 30MVA 13.2KV and both have sub transient reactance of 20% and the line reactance of 125 on a base of machine ratings. The motor is drawing 25MW at 0.85 p.f leading. The terminal voltage is 12KV when a three-phase short circuit fault occurs at motor terminals. Solve for the sub transient current in generator motor and at fault point.	L3	4	16
		Or			
	b	Develop the equations for bus voltages fault current and line currents of double line to ground fault.	L3	4	16
15.	a	Apply the fourth order Runge Kutta method in the study of power system stability.	L3	5	16
		Or			
	b	Organize the step by step algorithm for solving stability analysis of multi machine system using classical synchronous generator model.	L3	5	16