

Exam.Code:1017

Sub. Code: 7779

1129

M.E. Electrical Engineering (Power System)

First Semester

EE-8101: Advanced Power System Analysis

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt any five questions.

x-x-x

- I. Form Y bus using singular transformation method for the given data. Take bus 1 as reference bus.

	From-To	Impedance (pu)
1	1-2(1)	0.6
2	1-3	0.3
3	3-4	0.4
4	1-2 (2)	0.2
5	2-4	0.1

(10)

- II. a) A 3-bus system consists of line data and bus data as given below. Using fast decoupled load flow method, determine the phasor values of voltages at bus 2 and 3.

From-To	Bus	PG(MW)	QG(MVAR)	PD	QD	V
1-2	1	150	-	-	-	1.05
2-3	2	-	-	400	200	-
1-3	3	200	-	-	-	-

- b) Compare Gauss-seidel and Newton Raphson methods of load flow. (2x5)

- III. For the given system data calculate the line outage sensitivity factors for the outages on lines 1-2 and 2-3.

From-To	Reactance(pu)	Bus	Bus load MW	Generation (MW)
1-2	0.2	1	-	150
1-4	0.25	2	-	350
2-3	0.6	3	220	-
2-4	0.1	4	480	-
3-4	0.3	-	-	-

(10)

P.T.O.

(2)

- IV. Explain the solution procedure for state estimation using weighted least square method with a suitable example. (10)
- V. Discuss strategy to solve optimal power flow with using linear programming approach. (10)
- VI. An alternator of negligible resistance with solidly grounded neutral having rated voltage at no load condition and fault currents are (i) three phase fault = 4.0 pu (ii) line to ground fault = 2.45 pu. Determine per unit values of sequence reactance of the machine. (10)
- VII. a) What is the need of short circuit studies and how it is performed?
b) The phase voltages across a certain load are given as:-
 $V_a = 176 - j132$
 $V_b = -128 - j96$
 $V_c = -160 + j100$ (5,5)
- VIII. Discuss Sequential method of AC-DC power flow calculation with the help of a flowchart. (10)

x-x-x