Q.P. Code: 19EE0218 **R19**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech III Year II Semester Regular Examinations August-2022

POWER SYSTEM ANALYSIS

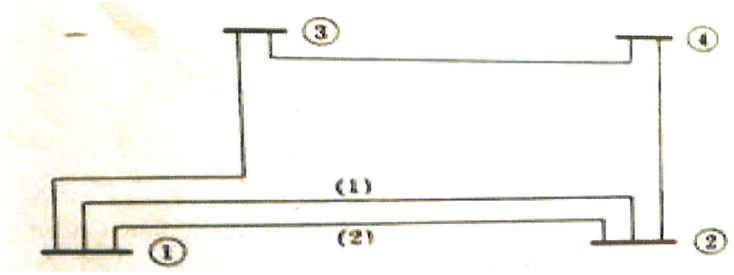
(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	**a**	Define the terms i) Graph ii) Sub-graph iii) Tree iv) Co-tree v)Planar Graph vi)Branch and Links	**L2**	**6M**
	b	For the network shown below. Draw the Oriented graph from that find Bus Incident matrix.	**L3**	**6M**



OR

2		For the following data form the bus admittance matrix by using By Direct inspection Method if the line series impedances are as given.	**L3**	**12M**

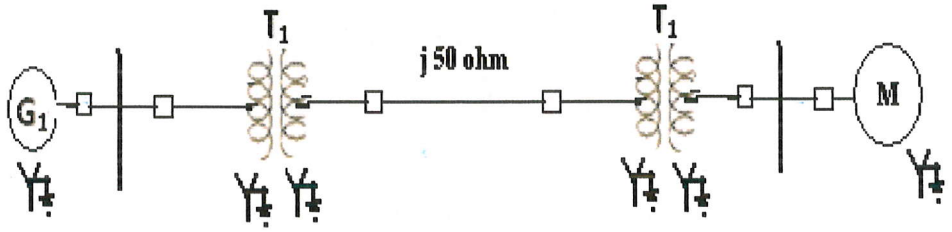
Bus code	Impedances
1-2	0.15+j0.6 p.u
1-3	0.1+ j0.4 p.u
1-4	0.15+j0.6 p.u
2-3	0.05+5j0.2 p.u
3-4	0.05+j0.2 p.u

UNIT-II

3	**a**	Explain different types of reactors briefly.	**L2**	**6M**
	b	Draw the Per Unit equivalent reactance network of a three-phase power system consisting of a generator, transmission line, transformer, and motor.	**L3**	**6M**

OR

4	Draw the reactance diagram for the power system shown in fig. Neglect resistance and use a base of100MVA, 220KV in 50KΩ line. The ratings of the generator motor and transformer are given below. Generator: 40MVA,25KV,X=20% Motor: 50MVA,11KV,X=30% Y-Y Transformer: 40MVA,33Y -220YKV,X=15% Y-Y Transformer: 30MVA, 11Y -220Y KV,X=15%.		L3	12M



UNIT-III

5	a	What is load flow analysis? What is the necessity for load flow studies?	L2	4M
	b	Derive and explain about static load flow equations.	L3	8M

OR

6	a	Write step by step algorithm for Gauss-seidel method with PV buses.	L2	8M
	b	List the merits and demerits of Gauss-Seidel method.	L3	4M

UNIT-IV

7		With neat sketch explain the Flow Chart for N-R Rectangular Coordinate Method when PV Bus is present.	L3	12M

OR

8	a	Explain about Decoupled Load Flow Method.	L2	6M
	b	What are the Comparisons of Decoupled & Fast Decoupled Methods?	L3	6M

UNIT-V

9	a	What is steady state stability? and define steady state stability limit.	L2	6M
	b	State and derive swing equation.	L3	6M

OR

10	a	Derive an expression for critical clearing angle.	L2	6M
	b	A Large generator is delivering 1.0pu power to an initiate bus through a transmission network. The maximum power switch can be transferred for pre fault, during fault and post fault conditions are 1.8p.u,0.4p.u and 1.3p.u respectively find the critical clearing angle.	L3	6M

*** END ***