R18 Regulation *Subject code:2P6BC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Supplementary Examinations, December 2024

POWER SYSTEM ANALYSIS

(EEE)

Maximum Marks: 70 Date:02.01.2025 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

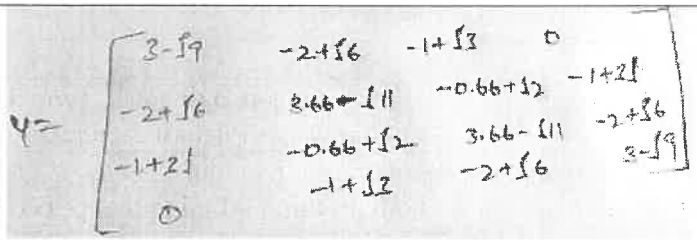
Part-A

All the following questions carry equal marks (10X2M=20) Marks)		CO	Bloom Tx
1	What are the applications of Y-bus matrix?	1	L1
2	Explain the following terms (i) Tree (ii) Co- Tree (ii) Branch	1	L1
3	What is PQ bus?	2	L1
4	List of various types of buses in load flow studies.	2	L1
5	Define Zero sequence network.	3	L1
6	What are the advantages of load flow studies?	3	L1
7	What is steady state limit?	4	L1
8	Define stability.	4	L1
9	Define power angle equation.	5	L1
10	Write an expression for critical clearing angle and critical clear time?	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
11	Derive an Expression for adding a branch element between two buses in the Z_{bus} building algorithm. [10M]	1	L2
	OR		
12	Build Z_{bus} for 3- bus system connecting given. [10M]	1	L2
13	A)Flow chart GS method with controlled pv bus [5M] B) Flow chart GS method with out controlled pv bus [5M]	2	L2
	OR		

Element	Bus code	impedance
1	1-2	j0.1
2	1-2	j0.25
3	1-3	j0.1
4	2-3	J0.1

14	 With P2=0.5p.u, Q2=-0.2p.u, P3= -1p.u,Q3=0.5p.u, P4=0.3p.u, Q4= -0.1p.u V1=1.04 volt. Determine value of V2 at first iteration in GS method. [10M]	2	L2
15	In a 3-phase, 4-wire system, the current R, Y, B lines under abnormal condition of loading are as under I_r=20+J30,I_y=32+25j,I_b=15+35J Amperes. Calculate positive, negative and zero sequence in R line and return current in neutral wire. [10M]	3	L2
	OR		
16	In a 3-phase ,4-wire system, the current R,Y,B lines under abnormal condition of loading are as under I_r=25+J30,I_y=30+25j,I_b=10+35J Amperes. Calculate positive, negative and zero sequence in B line and return current in neutral wire. [10M]	3	L2
17	Explain the various method of connecting current limiting series reactors. [10M]	4	L2
	OR		
18	Draw the positive, negative and zero sequence diagram for five different three phase transformer winding connection. [10M]	4	L2
19	A) What is swing and derive the swing equation. [5M] B) Explain point by point method swing equation. [5M]	5	L2
	OR		
20	Draw and Explain power angle curve of synchronous machine. [10M]	5	L2