R18 Regulation *Subject code:2P6BC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, May 2025

POWER SYSTEM ANALYSIS

(EEE)

Maximum Marks: 70 Date: 20.06.2025 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.
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)		Marks	CO	BTL
1	What are the applications of Y-bus matrix?	2M	1	L1
2	Explain the following terms (i) Tree (ii) Co- Tree	2M	1	L1
3	What is PQ bus?	2M	2	L1
4	List of various types of buses in load flow studies.	2M	2	L1
5	Define Zero sequence network.	2M	3	L1
6	Write the advantages of load flow studies?	2M	3	L1
7	What is the steady state limit?	2M	4	L1
8	Define stability.	2M	4	L1
9	Write the application of equal area criterion.	2M	5	L1
10	Define a synchronizing coefficient.	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Derive an Expression for adding a branch element beet wean 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) Explain the load flow solution using GS method. b) Explain Advantages and disadvantages of GS method .	5M 5M	2	L2
	OR			
14	a) Derive the power flow equation in polar form. b) Write the advantages and disadvantages of Gauss-Seidel method.	5M 5M	2	L2

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

15	Derive the expression for single line to ground fault with out fault impedance.	10M	3	L2
	OR			
16	Draw the sequence of network in power system.	10M	3	L2
17	Different bet weans Study state stability, Transient stability and Dynamic stability.	10M	4	L2
	OR			
18	Write a short note on synchronizing power coefficient and transfer reactance.	10M	4	L2
19	Derive the expression for critical clearing angle and time.	10M	5	L2
	OR			
20	Draw and Explain power angle curve of synchronous machine.	10M	5	L2