



R18 Regulation

Subject code:2P6BC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, November 2025

POWER SYSTEM ANALYSIS

(EEE)

Maximum Marks: 70

Date: 11.11.2025

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 (ii) Branch	2M	1	L1
3	What is PQ bus?	2M	2	L1
4	List of various types of buses in load flpw studies.	2M	2	L1
5	Define Zero sequence network	2M	3	L1
6	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	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	Form the Y_{bus} for a given network by using direct inspection method. As shown Table:1	10M	1	L2												
<table border="1"> <thead> <tr> <th>Element</th> <th>impedance</th> </tr> </thead> <tbody> <tr> <td>1-2</td> <td>2+3j</td> </tr> <tr> <td>1-3</td> <td>1+4j</td> </tr> <tr> <td>2-3</td> <td>3+5j</td> </tr> <tr> <td>2-4</td> <td>6+7j</td> </tr> <tr> <td>3-4</td> <td>12+5j</td> </tr> </tbody> </table>		Element	impedance	1-2	2+3j	1-3	1+4j	2-3	3+5j	2-4	6+7j	3-4	12+5j			
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13	Derive the expression for power flow studies Newton Rapshon method for polar form.	10M	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
15	How many types of sequence system? Determine the unbalance phase voltage V_r , V_y and V_b in a circuit where $V_{r1}=50+j0$, $V_{r2}=80+j90$, $V_{r0}=10+j45$ Volts.	10M	3	L2
	OR			
16	Draw the sequence of network in power system.	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	Derive the expression for critical clearing angle and time.	10M	5	L2
	OR			
20	Explain the method of improving Transient Stability.	10M	5	L2