R20 Regulation *Subject code:3P5BC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, May 2025

POWER SYSTEM-II

(EEE)

Maximum Marks: 70 Date: 24.06.2025 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 is bundled conductors?	2M	1	L1
2	What is transposition and draw the diagram	2M	1	L1
3	Write equations for A B C D parameters of Nominal-Pie method of medium transmission line.	2M	2	L1
4	Draw the phasor diagram of the nominal-Pie method.	2M	2	L1
5	Write the formula for the surge impedance and surge impedance loading of long line.	2M	3	L1
6	Estimate the generalized constants(A,B,C,D) of long line	2M	3	L1
7	Classify the types of system transients.	2M	4	L1
8	List 3 factors affecting the corona	2M	4	L1
9	State sag ? and what is tension ?	2M	5	L1
10	Write short notes on guard ring and define String Efficiency	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Derive the expression for capacitance of a three-phase circuit line with symmetrical spacing.	10M	1	L2
	OR			
12	Discuss and derive the expression for the inductance of a single phase two wire line.	10M	1	L2
13	a) Derive the A, B, C and D constants of medium transmission lines using nominal pi method. b) Explain short transmission line with neat phasor diagram.	5M 5M	2	L2
	OR			
14	A single phase transmission line delivers 2 MW be of power at the receiving end at a voltage of 33 kV and 0.9 p.f. Lagging. The total resistance of the line is 10 ohm and the total inductive reactance is 18 ohms. calculate : (i) Percentage voltage regulation (ii) Sending end power factor (iii) Transmission efficiency.	10M	2	L2

15	Find the rigorous solution for long transmission line with the help of ABCD parameters.	10M	3	L2
	OR			
16	A 3-φ transmission line 200 km long has the following constants : Resistance/phase/km = 0·16 Ω Reactance/phase/km = 0·25 Ω Shunt admittance/phase/km = 1·5 × 10–6 S Calculate by rigorous method the sending end voltage and current when the line is delivering a load of 20 MW at 0·8 p.f. lagging. The receiving end voltage is kept constant at 110 kV	10M	3	L2
17	a) Explain about i)skin effect ii)proximity effect iii)Ferranti effect b) Discuss about the factors affecting the corona?	5M 5M	4	L2
	OR			
18	Derive travelling wave.	10M	4	L2
19	Discuss and Derive about the sag with equal and unequal heights of the towers.	10M	5	L2
	OR			
20	Discuss and Derive the mathematical expression for string efficiency by using guard ring for 3 pin insulators discs	10M	5	L2