R22 Regulation *Subject code: 4E4BE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Semester Supplementary Examinations, December 2025

POWER SYSTEM – II

(EEE)

Maximum Marks: 60 Date:29.12.2025 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 10 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 (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	Determine the ABCD constants for short transmission line.	1M	CO1	BL1
b)	What is visual critical voltage due to corona?	1M	CO1	BL2
c)	Define Power factor.	1M	CO1	BL1
d)	List the advantages of Series compensation.	1M	CO1	BL1
e)	Mention the merits of using per unit system.	1M	CO2	BL1
f)	What is attenuation factor 'k'?	1M	CO2	BL2
g)	Present the need for a lightning arrester.	1M	CO3	BL1
h)	What are the causes of over voltages in an electrical system?	1M	CO3	BL2
i)	Write the symmetrical components of three phase system.	1M	CO3	BL2
j)	Give the reason for faults in power system?	1M	CO3	BL1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Derive expression for voltage regulation of medium transmission lines using nominal -T method with equivalent circuit and necessary phasor diagram.	10M	CO1	BL3
	OR			
3	Find the disruptive critical voltage and visual corona voltage for a 3 phase 220 kV line consisting of 22.26 mm diameter conductors spaced in a 6 m delta configuration. The following data can be assumed. Temperature 25^0C, pressure 73 cm of mercury, surface factor 0.84, irregularity factor for local corona 0.72 and 0.82 for decided corona.	10M	CO1	BL3
4	a) Write the causes for low power factor in power system. b) Explain (i) Phase advancers (ii) Static capacitors.	5M 5M	CO1	BL2
	OR			
5	a) Explain the effect of shunt compensation on distribution system. b) How do you justify economically the connection of capacitors for the improvement of p.f.	5M 5M	CO1	BL2

6	Define the per unit value of a quantity. How will you change the base impedance from one set of base values to another set?	10M	CO2	BL3
	OR			
7	With neat diagram discuss the behaviour of a travelling wave when it reaches the end of a) Open circuited transmission line. b) Short circuited transmission line.	10M	CO2	BL3
8	a) Discuss the phenomena of a lightning stroke. b) Explain the woking of valve type lightning arrester.	5M 5M	CO3	BL2
	OR			
9	a) Discuss the advantages and disadvantages of overhead ground wires. b) Enumerate the basic concepts of insulation coordination.	5M 5M	CO3	BL2
10	What is meant by sequence impedance? Explain the sequence network of an unloaded generator.	10M	CO3	BL2
	OR			
11	Derive the expression for fault current for a double line to ground fault in an unloaded generator in terms of symmetrical components.	10M	CO3	BL3