R18 Regulation *Subject code: 2P6BA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, April 2026

POWER SYSTEMS-II

(EEE)

Maximum Marks: 70 Date: 13.04.2026 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 the length and voltage levels of the shortTransmission line?	2M	1	L1
2	Shunt capacitance is usually neglected in which typeof transmission lines, why?	2M	1	L1
3	Write ABCD constants for medium transmissionline.	2M	2	L1
4	What is GMR write the relationship with radius?	2M	2	L1
5	What surge impedance?	2M	3	L1
6	Define visual critical voltage.	2M	3	L1
7	What is string efficiency?	2M	4	L1
8	What is safety factor of insulator?	2M	4	L1
9	What is the range of surge impedance of overheadlines and an underground cable?	2M	5	L1
10	What is proximity effect?	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Calculate the loop inductance per km of a single-phase transmission line comprising of two parallel conductorsone meter apart and 1.25 cm in diameter .Also calculatethe reactance of thr transmission line if frequency is 50 Hz.	10M	1	L2
	OR			
12	Derive the expression for what is the effect of ground (earth) on capacitance of a transmission line.	10M	1	L2
13	Analyze a medium transmission line with nominal π method.	10M	2	L2
	OR			
14	Explain and derive expression for surge impedance andsurge impedance loading.	10M	2	L2
15	Derive the mathematical expression for Reflectionand Refraction Coefficients – Termination of lineswith Open Circuited Line.	10M	3	L2
	OR			

16	With neat sketch explain about suspension type andstrain type insulators.	10M	3	L2
17	A transmission tower on a level ground gives a minimum clearance of 8 metres for its lowest conductor with a sag of 10 m for a span of 300 m. Ifthe same tower is to be used over a slope of 1 in 15,find the minimum ground clearance obtained for thesame span, same conductor and same weather conditions.	10M	4	L2
	OR			
18	Derive the sag expression for a transmission line withthe effect of ice covering and wind pressure.	10M	4	L2
19	Explain and derive the terms critical disruptivevoltage, visual critical voltage and corona loss.	10M	5	L2
	OR			
20	The towers of height 30 m and 90 m respectively support a transmission line conductor at water crossing. The horizontal distance between the towers is 500 m. If the tension in the conductor is 1600 kg, find the minimum clearance of the conductor and water and clearance mid-way between the supports. Weight of conductor is 1·5 kg/m. Bases of the towers can be considered to be at water level.	10M	5	L2