Regulation **R18** *Subject code: 2P6BA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, February 2024

POWER SYSTEMS-II

(EEE)

Maximum Marks: 70 Date:15.02.2024 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)

		CO	Blooms Tx
1	What are bundled conductors?	CO1	L2
2	ACSR conductor having 7 steel stands surrounded by 25 aluminum conductor will be specified as?	CO1	L4
3	What is the GMD&GMR?	CO2	L2
4	What is Skin Effect?	CO2	L1
5	What is Ferranti effect?	CO3	L2
6	What are the factors affecting the skin effect?	CO3	L2
7	What are the factors affecting the corona?.	CO4	L2
8	Classification of overhead line insulators?	CO4	L1
9	What is critical Disruptive voltage?	CO5	L2
10	What are the causes of insulation failure?	CO5	L2

Part-B

Answer any five of the following questions. (10M X 5=50Marks)

11	Derive the expression for inductance of a three phase double circuit line.	10	CO1	L2
	OR			
12	Derive the expression for the capacitance of a conductor in a double circuit hexagonal spaced three phase system?	10	CO1	L1
13	Derive the A, B, C and D constants of long transmission lines using Rigorous solution.	10	CO2	L2
	OR			
14	Derive Efficiency and voltage regulation for nominal-T method for medium transmission lines?	10	CO2	L3
15	Write about the Transmission lines with open circuit and short circuit lines	10	CO3	L2
	OR			
16	Explain the various factors governing the performance of transmission lines	10	CO3	L3
17	A transmission line has a span of 214 metres between level supports. The conductors have a cross-sectional area of 3·225 cm^2. Calculate the factor of safety under the following	10	CO4	L4

conditions :
Vertical sag = 2·35 m ; Wind pressure = 1·5 kg/m run
Breaking stress = 2540 kg/cm2 ; Wt. of conductor = 1·125 kg/m run

OR

18	Obtain the mathematical expression for potential distribution over a string of suspension type insulators	10	CO4	L2
19	A 132 kV line with 1·956 cm dia. conductors is built so that corona takes place if the line voltage exceeds 210 kV (r.m.s.). If the value of potential gradient at which ionisation occurs can be taken as 30 kV per cm, find the spacing between the conductors.	10	CO5	L1

OR

20	Derive the sag expression for a transmission line at equal level supports	10	CO5	L2