



R20 Regulation **Subject code: 3P4BE**
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech IV Semester Supplementary Examinations, February-2024

Power Systems-I
(EEE)

Maximum Marks: 70

Date: 26.04.2024

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 which carries 10M.
 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	Bloom Tx
1	What is condenser. Give the classification of condensers used in thermal power plants.	CO1	L1
2	List the salient points of solar energy	CO1	L1
3	Define diversity factor. Justify whether diversity factor affects the cost of generation or not	CO2	L1
4	What is tariff. List different types of tariff.	CO2	L1
5	List the methods of equalizing potential across the insulators	CO3	L1
6	What is shielding. Write its function in cables	CO3	L1
7	Write about disadvantages of corona	CO4	L1
8	What is transposition. Why it is made	CO4	L1
9	Write the advantages of ring main distribution system	CO5	L2
10	What is distributor. What is the design criterion of a distributor	CO5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	Explain the working of thermal power station with the help of single line diagram. Explain the function of each component of thermal power station. [10]	CO1	L2
OR			
12	A. Explain the working of hydroelectric power station. [5] B. List out the disadvantages of conventional energy sources. [5]	CO1	L2
13	A. Define maximum demand, connected load, demand factor and load factor.[5] B. Explain base load and peak load with neat sketch. [5]	CO2	L2
OR			
14	A. Explain cost of electrical energy with the help of fixed and running charges. [5] B. A supply is offered based on fixed charges of Rs 30 per annum plus 3 paise per unit or alternatively at the rate of 6 paise per unit of first 400 units per annum and 5 paise for all the additional units. Find the number of units taken per annum for which the cost under both tariffs becomes the same. [5]	CO2	L2
15	A. What is grading of cables. Give the classification and explain any one	CO3	L2

	method briefly. [5] B. Write about different types of insulators. [5]		L2
	OR		
16	A. Define string efficiency. Mention the methods to improve string efficiency. [10]	CO3	L2
17	A. Derive an expression for inductance of a single-phase of transmission line. [7] B. Write about bundled conductors [3]	CO4	L3
	OR		
18	A. Derive an expression for capacitance of a single-phase transmission line. [7] B. Discuss the factors affecting corona loss in a transmission system. [3]	CO4	L2
19	A. Compare underground and overhead distribution systems. [5] B. Explain the voltage drop calculation in ac distribution when power factors of the loads are referred to with respective load voltages. [5]	CO5	L2 L2
	OR		
20	A. Derive an expression for power loss in a uniformly loaded distributor fed at one end. [5] B. A 2-wire DC ring distributor is 300 m long and is fed at 240 V at point A. At point B, 150 m from A, a load of 120 A is taken and at C, 100 m in the opposite direction, a load of 80 A is taken. If the resistance per 100 m of single conductor is 0.03Ω , find: (i) current in each section of distributor (ii) voltage at points B and C. [5]	CO5	L3 L3