



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

B.Tech IV Semester Supplementary Examinations, December 2024

**POWER SYSTEM-I
(EEE)**

Maximum Marks: 70

Date:12.12.2024

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	State the need of a surge tank in hydroelectric power plant	1	L1
2	State the function of steam turbine in thermal power station.	1	L1
3	List any four basic components of a wind mill.	2	L1
4	Define load duration curve?	2	L1
5	What are the methods of equalizing the potential	3	L1
6	What is grading?	3	L1
7	What is the effect of inductance and capacitance in transmission lines?	4	L1
8	What is inductance of transmission line?	4	L1
9	What are the requirements of a distribution system	5	L1
10	What is the importance of load power factors in a.c. distribution?	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
11	Explain the requirements of selection of site for thermal power plants. [10M]	1	L3
OR			
12	A. Explain with a neat sketch the various parts of a nuclear reactor. [5M] B. What is tidal energy? Explain briefly about tidal energy. [5M]	1	L3
13	A. Discuss the effect of load factor and diversity on the cost of electrical energy generated. [5M] B. A 100MW power station delivers 100MW for 2 hours, 50MW for 6 hours and is shut down for the rest of the day. It is also shut down for maintenances for 45days each year. Calculate its annual load factor. [5M]	2	L3
OR			
14	A. Explain load curves and selection of generating units. [5M] B. A generating station has a maximum demand of 25mw, a load factor of 60%, a plant capacity factor of 50% and a plant use factor of 72%. Find (i) the reserve capacity of the plant (ii) the daily energy produced and (iii) maximum energy that could be produced daily if the plant while running as per schedule, were fully loaded [5M]	2	L3

15	A. What is insulator and explain different types of insulators. [5M] B. Explain about different types of insulating materials. [5M]	3	L3
	OR		
16	A. Explain inter sheath grading? [5M] B. What are the essential points of all electrical cables, explain types of cables? [5M]	3	L3
17	A. Explain about inductance and capacitance of three phase lines with symmetrical and unsymmetrical spacing. [5M] B. Explain about line conductors. [5M]	4	L3
	OR		
18	A. Calculate the line inductance of conductor. [5M] B. Calculate the loop inductance per km of a single-phase overhead line consisting of two conductors each 1 cm diameter and 1.2 m apart. [5M]	4	L3
19	A. In a A.C distribution system, calculate power factor referred to respected load voltages. [5M] B. Derive an expression for the voltage drop for a concentrated loading distributor fed at both ends. [5M]	5	L3
	OR		
20	A. Explain the design features of A.C distributed system. [5M] B. Explain about 1-phase and 3-phase ,3-phase 4-wire Ac distribution system and bus bar arrangement. [5M]	5	L3