R18 Regulation *Subject code: 2P5BA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, July 2024

POWER SYSTEMS-I

(EEE)

Maximum Marks: 70 Date:19.07.2024 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 are the main parts of nuclear reactor and their functions?	1	L1
2	What are the types of turbines?	1	L1
3	State the function of a Gear box in a wind mill.	2	L1
4	What are the components of a solar panel?	2	L1
5	What are the requirements of a distribution system	3	L1
6	Why is regenerator used in gas turbine power plant?	3	L1
7	Define a substation?	4	L1
8	What is touch voltage?	4	L1
9	Why is tariff for power load less than the lighting load?	5	L1
10	What is block rate tariff?	5	L1
	Part-B		
Answer All the following questions. (5X10M=50Marks)			
11	A. State the requirements of selection of site for thermal power plants.[5M] B. Explain the function of the following[5M] i) Dam ii) Spillway iii) Surge tank iv) Draft tube	1	L2
	OR		
12	A. Explain with a neat sketch the various parts of a nuclear reactor. [5M] B. Discuss the factors for the choices of site for a nuclear power plant[5M]	1	L2
13	A. Explain briefly about PV cell characteristics and equivalent circuit [5M] B. What are the advantages and disadvantages of wind power? [5M]	2	L2
	OR		
14	A. Explain briefly about battery storage system[5M] B. What are the advantages and disadvantages of hybrid power system? [5M]	2	L2

15	A. Explain the radial distribution system with neat diagram and list out its merits and demerits. [5M] B. A 2 wire DC distributor ABCDEA in the form of a ring main is fed at point 'A' at 230V and is loaded as follows: 20A at B, 40A at C, 60A at D and 20A at E. The resistances of various sections (ground and return) are AB = 0.1Ω, BC = 0.05Ω, CD = 0.01Ω, DE = 0.025Ω and EA = 0.075Ω. Determine the point of minimum potential and current in each section of distributor. [5M]	3	L2
	OR		
16	Explain about single phase system and Voltage at the sending end with diagrams. [10M]	3	L2
17	A. Give the comparison of outdoor and indoor substation. [5M] B. Explain in detail about constructional aspects of gas insulated substation[5M]	4	L2
	OR		
18	A. Derive an expression for the capacitances of a single core cable. [5M] B.A single core cable has a conductor diameter of 1 cm and internal sheath diameter of 1.8cm. if impregnated paper of relative permittivity 4 is used as the insulation, calculate the capacitances for 1km length of the cable. [5M]	4	L2
19	A. Define and explain the significance of the following terms with illustrations. (i) Demand factor, (ii) Load factor, (iii) Diversity factor and (iv) Plant factor[5M] B. The maximum demand on a power station is 100MW. If the annual load factor is 40%, calculate the total energy generated in a year. [5M]	5	L2
	OR		
20	A. What is power factor tariff? Explain different types of power factor tariff. [5M] B.A consumer has a maximum demand of 200KW at 40% load factor. If the tariff is RS.100 per KW of maximum demand plus 10 paise per kwh, find the overall cost per kwh. [5M]	5	L2