



R22 Regulation

Subject code: 4E3BB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, July 2024

POWER SYSTEM – I (Electrical And Electronics Engineering)

Maximum Marks: 60

Date: 20.07.2024 Duration: 3 hours

- Note:**
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 10 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		CO	Bloom Tx														
All the following questions carry equal marks (10X1M=10 Marks)																	
1.a)	Write the use of condenser in steam power plant?	CO1	L2														
b)	What is a chain reaction?	CO1	L1														
c)	Define Diversity Factor?	CO2	L1														
d)	The values of load factor and demand factor are always less than 1. Why?	CO2	L2														
e)	List types of insulators?	CO3	L3														
f)	Define Sag?	CO3	L1														
g)	What is an Insulator?	CO3	L1														
h)	What is the need of GIS?	CO3	L1														
i)	What are the factors for selection of substation?	CO3	L1														
j)	On what factors does a feeder of distribution system is designed?	CO3	L3														
Part-B																	
Answer All the following questions. (5X10M=50Marks)																	
2	Explain hydro power plant with neat sketch. List the advantages and disadvantages. [10M]	CO1	L2														
OR																	
3	Write short notes on a) Tidal energy b) Solar Energy [5+5]M	CO1	L2														
4	a) Explain the following terms: a) Average load b) maximum demand c) Load factor d) Connected load [5M]	CO2	L2														
	b) Derive the expressions for two part form and three part form for cost of electrical energy calculation in economics of generation. [5M]	CO2	L4														
OR																	
5	A generating station has the following daily load cycle: [10M]	CO2	L5														
	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>Time (Hours)</td> <td>0-6</td> <td>6-10</td> <td>10-12</td> <td>12-16</td> <td>16-20</td> <td>20-24</td> </tr> <tr> <td>Load (MW)</td> <td>20</td> <td>25</td> <td>30</td> <td>25</td> <td>35</td> <td>20</td> </tr> </table>	Time (Hours)	0-6	6-10	10-12	12-16	16-20	20-24	Load (MW)	20	25	30	25	35	20		
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Load (MW)	20	25	30	25	35	20											
	Draw the load curve and Determine (i) maximum demand, (ii) units generated per day, (iii) average load, (iv) load factor																

6	Derive an expression for the capacitance of single-phase overhead transmission line. [10M]	CO3	L3
OR			
7	a) Explain various methods of equalizing potential across an insulating string? [5M]	CO3	L2
	b) In a 33 kV overhead line there are three units in the string of insulators. If the capacitance between each insulator pin and earth is 11% of self capacitance of each insulator, Determine (i) distribution of voltage over three insulators (ii) string efficiency. [5M]	CO3	L5
8	a) Draw the AIS substation layout and explain each component. [5M]	CO3	L2
	b) With suitable diagrams explain the sectionalized single bus bar arrangement. [5M]	CO3	L2
OR			
9	a) Give the comparison between Air insulated substation and Gas insulated substation. [5M]	CO3	L4
	b) Draw the symbols for important equipment (at least eight) in substation and explain the function of each equipment briefly. [5M]	CO3	L2
10	a) Explain types of DC Distributors? [5M]	CO3	L2
	b) Compare underground distribution system and overhead distribution system. [5M]	CO3	L4
OR			
11	Explain about the calculation of voltage drops in AC distribution with power factor referred to: a) Receiving end [10M]	CO3	L2