



R22 Regulation

Subject code: 4E3BB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Regular Examinations, February 2024

POWER SYSTEM – I

(Electrical And Electronics Engineering)

Maximum Marks: 60

Date:19.02.2024 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)	What is the function of economiser?	CO1	L2
b)	List Demerits of hydropower plant?	CO1	L4
c)	Define Demand Factor?	CO2	L1
d)	Explain running cost of generating electrical energy?	CO2	L2
e)	What are bundled conductors?	CO3	L1
f)	Explain Skin effect ?	CO3	L2
g)	What is the need of a sub-station in power systems?	CO3	L1
h)	What is Bus-bar?	CO3	L1
i)	List the types of DC distributors.	CO3	L4
j)	Define power factor?	CO3	L1
Part-B			
Answer All the following questions. (5X10M=50Marks)			Bloom Tx level
2	a) Describe with a neat sketch the working of a wind energy conversion system with its main components. [5m]	CO1	L2
	b) Explain the working of fuel cell and their applications. [5m]		L2
	OR	CO1	
3	With neat sketch explain thermal power plant. List the advantages and disadvantages. [10m]	CO1	L2
4	a) What is a load duration curve ? Explain its significance? [5m]	CO2	L2
	b) Determine the demand factor and the load factor of a generating station, which has a connected load of 50MW and Maximum demand of 25MW. The units generated being 40×10^6 KW / Annum. [5m]	CO2	L3
	OR		
5	a) Explain the types of tariff for electrical energy charge to consumers. [5m]	CO2	L2
	b) Explain the factors considered in selection of number and sizes of the generating units? [5m]	CO2	L2
6	a) Derive an expression for the loop inductance of single phase overhead transmission line. [5m]	CO3	L3

	b) The three conductors of a 3 phase line are arranged at the corners of a triangle of sides 2 m, 2.5 m and 4.5 m. Calculate the inductance per km of the line when the conductors are regularly transposed. The diameter of each conductor is 1.24 cm. [5m]	CO3	L5
	OR		
7	a) Explain different types of Insulators used in overhead lines. [5m]	CO3	L2
	b) What is Sag and write the sag and tension calculations? [5m]	CO3	L3
8	a) Draw and explain the key diagram of a typical 11kV/ 400V indoor substation. [5m]	CO3	L2
	b) Explain the comparison of outdoor and indoor substations. [5m]	CO4	L2
	OR		
9	a) Draw the single line diagram of a GIS and explain. [5m]	CO4	L4
	b) With suitable diagrams explain the main and transfer bus bar arrangement. [5m]	CO4	L2
10	a) Explain Classification of distribution systems. [5m]	CO5	L2
	b) Compare AC distribution system and DC distribution system. [5m]	CO5	L5
	OR		
11	A 2-wire d.c. distributor cable AB is 2 km long and supplies loads of 100A, 150A, 200A and 50A situated 500 m, 1000 m, 1600 m and 2000 m from the feeding point A. Each conductor has a resistance of 0.01 Ω per 1000 m. Calculate the p.d. at each load point if a potential difference of 300 V is maintained at point A. [10m]	CO5	L5