R20 Regulation *Subject code:3P6BC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, December 2024

POWER SYSTEM OPERATION AND CONTROL

(EEE)

Maximum Marks: 70 Date:02.01.2025 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 an incremental fuel cost and what are its units?	1	L1
2	Define the incremental efficiency.	1	L1
3	What is penalty factor.	2	L1
4	What is hydro thermal scheduling	2	L1
5	What are the basic components of single area LFC?	3	L1
6	Write the formula for a synchronizing coefficient?	3	L1
7	What is the advantage of shunt compensator?	4	L1
8	What are the objectives of the load compensator?	4	L1
9	What is EMS? What are the major functions of it?	5	L1
10	Define WLSE.	5	L1
	Part-B		
Answer All the following questions. (5X10M=50Marks)		CO	Bloom Tx
11	Give algorithm for economic allocation of generation among generators of a thermal system neglecting transmission losses. Give steps for implementing this algorithm, and also derive necessary equations. [10M]	1	L2
	OR		
12	Explain about loss coefficients (B_{mn} coefficients). [10M]	1	L2
13	Explain about the short term of hydro thermal scheduling. [10M]	2	L2
	OR		
14	Derive the modeling of speed governing system and its fundamental characteristics of an excitation system. [10M]	2	L2
15	Explain about load frequency control and economic dispatch control. [10M]	3	L2
	OR		
16	Two generators rated 200 MW and 400MW are operating in parallel. The drop characteristics of their governors are 4% and 5% respectively from no load to full load. Assuming that the generators are operating at 50 Hz at no load, how would a load of 600 MW be shared between them? What will be the system frequency at this load? Assume free governor operation. Repeat the problem if the both governors have a drop of 4%. [10M]	3	L3

17	Explain Shunt and Series compensations. [10M]	4	L2
	OR		
18	Explain reactive power compensation in transmission system. [10M]	4	L2
19	Explain the hardware components of SCADA with neat diagram and also mention the functions of it. [10M]	5	L2
	OR		
20	Explain the different operating states of power system with state transition diagram. [10M]	5	L2