R18 Regulation *Subject code: 2P7BA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, November 2025

POWER SYSTEM OPERATION AND CONTROL

(EEE)

Maximum Marks: 70 Date: 24.11.2025 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.
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)		Marks	CO	BTL
1	What is an incremental fuel cost and what are its units?	2M	1	L1
2	Define the incremental efficiency	2M	1	L1
3	What is a UC problem?	2M	2	L1
4	What is the thermal constraint minimum up-time?	2M	2	L1
5	What are the basic components of an integral controller	2M	3	L1
6	What is the need of a fly-ball speed governor?	2M	3	L1
7	What are the different methods of voltage control?	2M	4	L1
8	What are the disadvantages of tap-changing transformers?	2M	4	L1
9	What is EMS? What are the major functions of it?	2M	5	L1
10	Define SCADA system?	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Obtain the condition for optimum operation of a power system with '*n*' plants.	10M	1	L2
	OR			
12	Explain the coordination equations without and with loss in economic load dispatch.	10M	1	L2
13	Explain the different constraints considered in solving a UC problem	10M	2	L2
	OR			
14	Using the DP method, how do you find the most economical combination of the units to meet a particular load demand?	10M	2	L2
15	Develop the block diagram of the LFC of a single-area system	10M	3	L2
	OR			
16	Obtain the block diagram of a two-area system	10M	3	L2
17	Compare the different types of compensating equipment for transmission systems	10M	4	L2
	OR			

18	Describe 'off-load' and 'on-load' tap-changing transformers.	10M	4	L2
19	Briefly discuss the various functions of energy control centre.	10M	5	L2
	OR			
20	Explain the different operating states of power system with state transition diagram	10M	5	L2