R20 Regulation *Subject code: 3P6BC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Regular Examinations, June/July 2023

POWER SYSTEM OPERATION AND CONTROL

(Electrical and Electronics Engineering)

Maximum Marks: 70 Date:27.06.2023 Duration: 3 hours

Part-A

All the following questions carry equal marks (10x2M=20 Marks)

1 What are the factors affecting Thermal efficiency of the unit?
2 Define cost curve.
3 What is the Hydro-thermal scheduling problem?
4 Write power loss formula?
5 Why frequency of the power system should be kept constant?
6 What is the proportional integral of LFC?
7 What are the advantages of compensating equipment for transmission systems?
8 What is load compensation?
9 What is EMS? What are its major functions?
10 What are the objectives of AGC?

Part-B

Answer All the following questions. (10MX 5=50Marks)

11 A. Briefly explain about an incremental fuel cost of thermal power station. (4)
B. The fuel cost of two units are given by, $C1=1.5+20P_{G1}+0.1P_{G1}^2$ Rs/hr, $C2=1.9+30P_{G2}+0.1P_{G2}^2$ Rs/hr. If the total demand on the generation is 200 MW, find the economic load scheduling of the two units. (6)

OR

12 A. Derive the condition for economic scheduling of generators in a plant. (5)
B. Discuss about the optimum generator allocation without line losses. (5)

13 Derive solution for short term hydro-thermal scheduling using kirchmayer's method. (10)

OR

14 Discuss the speed governing system with neat diagram. (10)

15 Give a typical block diagram for a two-area system inter connected by a tie line and explain each block. Also deduce relations to determine the frequency of oscillations of tie line power and static frequency drop. List out assumptions made. (10)

OR

16 A. Discuss in detail the importance of load frequency control. (5)
B. Derive the expression for dynamic response of isolated power system under uncontrolled case. (5)

17 What are the different types of reactive power compensating equipment for transmission systems? State the advantages and disadvantages of each. (10)

OR

18 A. Write short notes on compensated and uncompensated transmission lines. (5)
B. Explain briefly about the shunt and series compensation of transmission systems. (5)

19 Summarize the various functions, system monitoring and control of the load dispatch. (10)

OR

20 Explain the hardware components of SCADA with neat diagram and also mention the functions of it. (10)