



Regulation R18

Subject code: 2P78A

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, April 2024

POWER SYSTEM OPERATION AND CONTROL

(Electrical and Electronics Engineering)

Maximum Marks: 70

Date: 23.04.2024 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 10 questions. Answer any 5 questions which carries 12M.
 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)

- 1 What mean by penalty factor?
- 2 What is mean by ITL?
- 3 What is a UC problem?
- 4 What is short-term hydro-thermal co-ordination?
- 5 What is the nature of the generator-load frequency characteristic?
- 6 What is the Area of frequency response characteristic ' β '?
- 7 What are the objectives of load compensation?
- 8 List the methods of reactive power compensation.
- 9 Define system security.
- 10 Define SCADA system.

Part-B

Answer all the equations

(5X10M=50Marks)

- 11 Obtain the condition for optimum operation of a power system with ' n ' plants when losses are considered. [10]
- OR
- 12 Derive the transmission loss formula for a system consisting of n -generating plants supplying several loads inter connected through a transmission networks. State any assumptions are made. [10]
 - 13 Using the Forward dynamic programming approach, how do you find the most economical combination of the units to meet a particular load demand? [10]
- OR
- 14 Obtain the condition for economic generation of steam and hydro plants for short term scheduling. State the any assumptions are considered. [10]
 - 15 Develop the block diagram of the LFC of a single-area system. [10]
- OR
- 16 Obtain the block diagram of a two-area system. [10]

17 Describe 'off-load' and 'on-load' tap-changing transformers. [10]

OR

18 Why is voltage control required in power systems? Mention the different methods of voltage control employed in power system. Explain one method of voltage control in detail giving a neat connection diagram. [10]

19 Explain about SCADA and EMS functions. [5+5]

OR

20 Briefly discuss the various functions of energy control centre. [10]