Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SET B

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024

Semester : Semester VII - 2020
Course Code : EEE3025
Course Name : Power System Operation and Control
Program : B.Tech.

Date : 05-JAN-2024
Time : 9:30AM - 12:30 PM
Max Marks : 100
Weightage : 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **5 X 2M = 10M**

1. Explain tie line bias control of two area load frequency control with block diagram representation
(CO1) [Knowledge]

2. Explain the digital computer configuration of SCADA system with a neat diagram
(CO1) [Knowledge]

3. Explain:
(i)A G C
(ii)Economic load dispatch.
(CO2) [Knowledge]

4. SCADA is an acronym for Supervisory Control and Data Acquisition. SCADA systems are used to monitor and control a plant or equipment in industries such as telecommunications, water and waste control, energy. A typical SCADA system comprises of 1/0 signal hardware, Controllers, software, network & communication.Discuss the configuration and its components with neat sketch.
(CO3) [Knowledge]

5. Examine with a neat block diagram the Indian states of power system.
(CO5) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **5 X 10M = 50M**

6. The power demand is more than the generation and it is not economical & reliable to increase the generation by conventional sources. Day by day the use of non-conventional sources has been increased due to their economy and pollution free characteristics.Enumerate an expression for the equivalent regulation of parallel operation of two generators of different capacity considering regulation characteristics.

(CO1) [Comprehension]

7. Explain the Concept of Solution by Gradient Search techniques.

(CO2) [Comprehension]

8. Explain with the block diagram of Communication between master and remote control station of power System.

(CO3) [Comprehension]

9. Explain about TAKE-OR PAY FUEL Supply Contract.

(CO4) [Comprehension]

10. Illustrate with neat sketch the area lumped model of power system

(CO5,CO1,CO3) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **2 X 20M = 40M**

11. Two unit system has the following characteristics. Fuel cost equation of a thermal unit,
FT=25 PGT +0.03 PGT
2 Rs/h .

Water discharge equation of hydro plant, Q=5.6 PGH +0.003 PGH
2m3
/S

Power loss of the system Ploss=0.0035 PGH
2 MW

Take γ=5.1*10-4 Rs/m3

and λ=13 Rs/MWh. Determine the generation of each unit, the

load on the system and the losses. Use penalty factor method.

(CO3) [Application]

12. Two synchronous generators are initially supplying a common load at 1.0 p.u frequency (60Hz). The rating of unit 1 is 337MW and has 0.03pu. droop built into its governor. Unit 2 is rated at 420MW and has 0.05p.u droop. Find each units share of 0.1 p.u (75.7 MW or 10% of total generation) increase in the load demand. Also find the new line frequency (60Hz). The rating of unit 1 is 337MW and has 0.03pu. droop built into its governor. Unit 2 is rated at 420MW and has 0.05p.u droop. Find each units share of 0.1 p.u (75.7 MW or 10% of total generation) increase in the load demand. Also find the new line frequency

(CO4) [Application]