Q.P. Code: 16EE228 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech IV Year I Semester Supplementary Examinations November-2020

POWER SYSTEM OPERATION AND CONTROL

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 The fuel inputs per hours of plants 1 and 2 are given as follows: **12M**

$F_1 = 0.2\ P_{12} + 40\ P_1 + 120$ Rs/hr

$F_2 = 0.25\ P_{22} + 30\ P_2 + 150$ Rs/hr

Determine the economic operating schedule and corresponding cost of generation if the maximum and minimum loading of each unit is 100MW and 25MW and the demand is 180MW, transmission losses are neglected. If the load is equally shared by both units, determine the saving obtained by loading the units as per equal incremental production cost.

OR

2 Draw the flow chart for optimum operation of a power system with n plants when losses are considered. **12M**

UNIT-II

3 Briefly explain about short term problem in hydro-thermal scheduling. **12M**

OR

4 **a** Explain about interconnected grid system. **6M**

b What is the necessity of two different plats on same load? Explain. **6M**

UNIT-III

5 **a** Explain about block diagram representation of turbine model. **6M**

b What are the parts of speed governing system? Explain in detail. **6M**

OR

6 **a** Derive transfer function of steam turbine by making suitable assumptions. **6M**

b A 100 MVA synchronous generator operates on full load at a frequency of 50 Hz. The load is scheduled to 50 MW. Due to time lag in the governor system, the steam valve begins to close after 0.4 seconds. Determine the change in frequency that occurs in this time. M = 5 KW-S/KVA of generator capacity. **6M**

UNIT-IV

7 Draw the block diagram representation of a single area system and deduce the expression for the static and dynamic response of the system under uncontrolled case. **12M**

OR

8 Explain the proportional plus integral control for load frequency control of single area system. **12M**

UNIT-V

9 **a** Describe the effects of connecting the series capacitors in transmission system. **6M**

b Explain the limitations of series compensation. **6M**

OR

10 Explain the objectives of reactive power compensation. **12M**

*** END ***