Roll No. ....

24423

B. Tech. 7th Semester (EE) (Common

with Special Chance)

Examination – December, 2019

POWER SYSTEM OPERATION AND CONTROL

Paper : EE-405-F

Time : Three Hours]   [Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions, selecting at least *one* question from each Section. Question Number 1 is *compulsory*. All questions carry equal marks.

1. (a) What is the role of a tie in a multi control area system ?

   (b) How transient stability is different from steady state stability ?

   (c) Explain the concept of Load frequency mechanism.

   (d) Explain real, reactive and complex power.

   (e) Explain type 0 and 1 excitation system.

SECTION – A

2. (a) Explain in detail Load frequency control.

   (b) Derive the optimal generation scheduling including transmission loss.

3. Explain generator and governor model of automatic generation control of electric power.

SECTION – B

4. (a) How fuel cost in hydrothermal power station is minimized ?

   (b) Discuss the concept of economic dispatch control.

5. What is unit commitment problem ? How it is different from economic load dispatch problem ? Explain in detail.

SECTION – C

6. Distinguish between steady state, transient and dynamic stability of power system. Derive power angle equation.

7. (a) Write short note on power system stability and its types.

   (b) A generator is connected to a const. voltage bus through an external reactance of 0.3 p.u. The synchronus reactance of the generator is 0.2 p.u and the voltage magnitude of the const bus voltage is 1.C with its angle being 0 degree. The

generator delivers 0.9 p.u power to the const voltage bus. When the angle of its terminal voltage is 15 degree. Determine the magnitude and angle of its internal mmf.

SECTION – D

8. Discuss the role of AVR on transient stability of system also discuss the type 0 and 1 excitation system.

9. Write technical notes on :

   (a) Voltage collapse

   (b) Voltage stability