

B.TECH SEM – VII (2007 COURSE) (ELECTRICAL ENGG.) :

WINTER - 2017

SUBJECT: OPERATION AND CONTROL OF POWER SYSTEM

Day: **Friday**
Date: **19/01/2018**

Time: **02.30 PM TO 05.30 PM**
Max Marks: 80

W-2017-2572

N.B:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of remaining questions attempt **ANY TWO** from each section.
- 2) Both the sections should be written in the **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.
- 5) Use of non-programmable pocket calculator is **ALLOWED**.
- 6) Assume suitable data, if necessary.

SECTION-I

- Q.1** a) Explain the concept of equal area criterion to study power system stability. (05)
- b) Define unit commitment. Explain any two operational constraints to be considered while deciding unit commitment. (05)
- c) Draw neat block diagram of two area load frequency control. (04)
- Q.2** a) Explain point-by point method for the solution of swing equation. (08)
- b) Explain the concept of power system reliability. (05)
- Q.3** a) Explain with mathematical formulation the economic load dispatch of thermal generation units when transmission loss is neglected .Total generation must meet the total load demand. (07)
- b) Write short note on: (06)
- i) Heat rate curve of thermal unit
 - ii) Cost curve of thermal unit
- Q.4** a) Draw and explain the complete block diagram of load frequency control of isolated power system. (06)
- b) Two generators rated 250MW and 400MW are operating in parallel. The droop characteristics of their governors are 4% and 5% respectively from no load to full – load. Assuming that the generations are operating at 50Hz at no load , how would a load of 650MW be shared between them? What will be the system frequency at this load? Assume free governor operation. (07)

P.T.O.

SECTION-II

- Q.5** a) Explain the concept of real time control of power system. (05)
- b) Enlist different types of FACTS controllers. (05)
- c) Explain the following: (04)
- i) Power Pool
 - ii) Inadvertent power exchange
- Q.6** a) What are “States” in a power system? What do you mean by normal operating state? (08)
- b) What do you understand by energy control centers? (05)
- Q.7** a) Enlist the problems associated with series compensation. Explain the concept of sub-synchronous resonance. (08)
- b) Write short note on static VAR compensators (SVC) (05)
- Q.8** Explain following types to power interchange : (13)
- i) Energy Banking
 - ii) Capacity interchange
 - iii) Diversity interchange

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