Paper Code: EEE-031	Roll No.									

B.Tech.

(SEM VII) ODD SEMESTER EXAMINATION 2015-16

Power System Operation and Control

[Time: 3 hrs.] **[Max. Marks: 100]**

Note- ***Attempt All Questions. All Questions carry equal marks*:-**

Q-1. Attempt any four parts 5 X 4 =20

(a). Explain power system control centre and real time computer control system.
(b). Describe Level Decomposition in Power System.
(c). Explain power system voltage stability.
(d). Describe Unit Commitment.
(e). Explain power System Security.
(f). Describe Equality and inequality constraints.

Q-2. Attempt any two parts 10 X 2 =20

(a). Derive flow chart for economic dispatch neglecting losses.
(b). the fuel inputs per hour of plants 1 and 2 are given as

$F_1 = 0.2\ P_1^2 + 40\ P_1 + 120$ Rs per Hour

$F_2 = 0.25\ P_2^2 + 30\ P_2 + 150$ Rs per Hour

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

(c) Two generators rated 200 MW and 400 MW are operating in parallel. The droop characterstics of their governors are 4 % and 5%, respectively from no load to full load. Assuming that the generators are operating at 50 Hz at no load, how would a load of 600 MW be shared between them. What will be the system frequency at this load assume free governor operation.

Q-3 . Attempt any two parts 10 X 2 =20

(a). Derive the model of speed governing system.
(b). Explain Steady state analysis of single area system.
(c). Explain control area concept in load frequency control.

Q-4. Attempt any two parts 10 X 2 =20

(a). Explain automatic voltage control.
(b). Explain Different Excitation Systems and their controllers.
(c). Explain different methods of voltage and reactive power control.

Q-5. . Attempt any four parts 5 X 4 =20

(a). Describe STATCOM.
(b). Describe Thyristor controlled Series controller.
(c). Describe UPFC.
(d). Draw block diagram of two area system
(e). Explain Maximum Likelihood criterion in state space estimation.
(f). explain the role of state estimation in power system operations.