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SIXTH SEMESTER

B.TECHEE/EL

MID SEMESTER EXAMINATION

MARCH 2019

EE/EL-308, POWER SYSTEM OPERATION AND CONTROL

Time: 1Hr. 30 MIN

Max. Marks: 20

Note: Answer any five questions. All questions carry equal marks.
Assume suitable missing data, if any.

1. Explain with neat block diagram the philosophy of active and reactive power control. Discuss the main requirements of the AGC system. Define power system area, boundary of an area. 4
2. A sub grid has total rated capacity of 3000MW. It encounters a load increase of 40 MW when the normal operating load is 2000MW. Assume inertia constant H to be 5 sec, and regulation of the generators in the system as 3 Hz/pu MW. Find (i) ALFC loop parameters (ii) Statistic frequency drop (iii) Transient response of the ALFC loop. 4
3. Develop a mathematical model of turbine speed governing system and hence develop a transfer function block diagram. 4
4. Draw a block diagram, with illustrative transfer functions, of a single area load frequency control system. Explain the function of different components of such a control system. 4
5. What is shunt compensation? Discuss the method of reactive power injection. Using static var compensators give a compensation for a long transmission line with (a) TCR-FC (b) TSC-TCR. 4
6. What do you mean by stability of a power system? Distinguish between steady state dynamic and transient stability. Hence define Steady state stability limit, dynamic stability limit, and transient stability limit. 4