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MEPS-205

M.E./M.Tech., II Semester

Examination, December 2017

Power System Transients

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume suitable data if needed.

1. a) What are nature of transients and surges and what are the purpose of Earth wire in EHV lines?
   b) Distinguish between Lumped and distributed circuit transients.

2. a) What is RRRV and current chopping in circuit breakers?
   b) Two 11kV, 20MVA, three phase, star connected generators operate in parallel. The positive, negative, and zero sequence reactances of each being j0.18, j0.15, j0.10 p.u. The star point of generator is isolated and other is earthed through 92.0 ohm resistor. A single line to ground fault occurs at the terminals of one of generators. Estimate
      i) Fault current
      ii) Current in grounding resistor
      iii) Voltage across grounding resistor

3. a) What are traveling waves in distributed Parameters Multi-conductor lines?
   b) A unit step voltage surge is travelling on a long line of surge impedance Z_1. It reaches the junction with a cable of finite length whose far end is open The cable has a surge impedance of Z_2 and time of one-way travel on it is T. Draw Bewley lattice diagram and find from if the value of the junction at time 4T after the surge reaches the line-cable junction.

4. a) Give the Bergen methods of analysis and use of EMTP/ EMTDC for power system analysis.
   b) How to simulate the Surge diverters in Transient analysis.

5. a) Explain insulation co-ordinations.
   b) Explain overvoltage limiting devices.

6. a) Give applications of Z-transform methods in power system transients.
   b) Explain double frequency transients and basic transform of RLC circuits.

7. a) What are Lightning Performance Parameters?
   b) Describe protection of power system apparatus against surges.

8. a) What is importance of Neutral groundings and why Peterson coil is used?
   b) Explain protection of transmission lines against lightning.

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