MEPS-205

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

Examination, May 2018

Power System Transients

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.

ii) All questions carry equal marks.

1. What are the requirements to have Transients in an Electric system? Also give the reason, why the redistribution of current and voltage cannot takes place instantaneously? Discuss line energisation and de-energisation transients.

2. Explain lumped and distributed circuit transients with equivalent circuit representation.

3. Describe current dropping in circuit breakers. Mention effect of source impedance representation for the purpose of fault calculation in short and long transmission line.

4. Explain concept of travelling waves for lumped and distributed parameters for transmission line. How the frequency affects the behavior of travelling waves?

5. How transients can be analysed with Z-transform? Compare Fourier integral method with Z-transform technique.

6. Explain lighting mechanism in detail. How can we provide efficient protection to lines against direct stroke? Also, define the following terms:
   a) Coupling factor
   b) Protection angle
   c) Protection zone

7. Enlist different types of devices used for protection against over voltages at station on sub-station. Discuss breakdown of gaseous insulation.

8. Write in short about any two:
   a) BIL and SIL
   b) Arc extinction inside CBs.
   c) Surge diverters: Role and simulation for transients.

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