SAMPLE QUESTION

Second Semester M-Tech Degree Examination, October 2014
(2013 Scheme)
Branch : Electrical and Electronics Engineering
Streams : Power Systems
EPE 2001 : TRANSIENT ANALYSIS IN POWER SYSTEM

Time: 3 Hours   Max. Marks: 60

*Instruction : Answer **any two** from **each** Module*

MODULE - 1

1. What is TRV? Compare TRV across a circuit-breaker following the interruption of a fault current, when the fault current is symmetrical, asymmetrical and when arc voltage is considered.

2. Analyze the transients involved in the energization of an RL series circuit with an ac source voltage of $V_m Sin(\omega t+\theta)$. Explain the significance of circuit closing angle θ in designing a circuit-breaker, from the above analysis.

3. (a) Explain the reflection and refraction of traveling waves.   (4 marks)
   (b) Explain the behavior of traveling waves at the following line termination.
      (i) short circuit (ii) open circuit (iii) capacitive termination   (6 marks)

MODULE – 2

4. Briefly explain the phenomenon of Ferranti effect. Compare the transients involved in capacitance switching (disconnecting a capacitor bank) with and without considering Ferranti effect.

5. Derive the expression for initial voltage distribution for a transformer winding struck by a step function surge voltage.

6. (a) Explain the importance of the type of neutral connection in the development of transient voltage.   (3 marks)
   (b) Derive the expression for transient peak current involved in arcing ground of a three phase system.   (7 marks)

MODULE – 3

7. Explain the protection of transmission lines against lightning by ground wires.
8. Write short notes on the transient parameter values for transformers. (Inductance, Capacitance and Resistance)
9. Explain with suitable example, the surge protection scheme for an industrial drive system.