Total No. of Questions :8] *[Total No. of Printed Pages :2*

Roll No.....

MEHP/MEPS/MTPS-102

M.E/M.Tech. I Semester

Examination, June 2017

Power System Dynamics Analysis & Control

Time : Three Hours

Maximum Marks : 70

Note: i) Answer any five questions.
ii) All questions carry equal marks.

1. a) Explain the classification of power system stability.
   b) Discuss mid term and long term stability.

2. Explain constant flux linkage model of synchronous machine. What are the short-comings of classical model.

3. a) Explain Park's transformation.
   b) Discuss the concept of voltage stability and voltage collapse.

4. What are the types of excitation systems. Develop the mathematical model of excitation system and also explain various control and protective schemes of excitation system.

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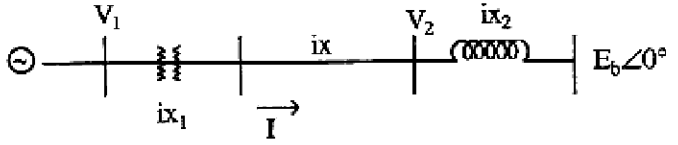
5. a) Discuss prime mover control system.
   b) Derive voltage and torque equations of synchronous machine.

6. A single machine is connected to load centre through a transmission line as shown in figure 1. The load centre is represented by a reactance connected to infinite bus the generator is initially operating with P_e = 1.0 p.u and the magnitude of voltage V_1 and V_2 are 1.0 p.u each. Find the maximum step increase in the mechanical power that will not cause transient instability. Use equal area criterian. Assume $X_y = 0.3, X_t = 0.1, X = 0.4, X_2 = 0.1$.



7. a) Discuss the basic structure and tuning of PSS.
   b) Describe the system state matrix including power system stabilizers.

8. Write short notes on any two of the following:
   i) Dynamic load
   ii) Rotor angle stability
   iii) Electromechanical oscillations

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