

Roll No..

MEHP/MEPS/MTPS-102

M.E./M.Tech., I Semester

Examination, June 2023

Power System Dynamics Analysis and Control

Time : Three Hours

Maximum Marks : 70

- Note:** i) Attempt any five questions.
ii) All questions carry equal marks.

- ✓ 1. a) Explain mid-term and long-term stability.
b) What is power system stability? Explain rotor angle stability in brief.
2. What are the basic equations of a synchronous machine? Explain how the detailed models of a synchronous machine are developed using phase variables and application of Park's transformation?
- ✓ 3. Discuss Explain equal area criterion of stability. How it can be used to study the stability of a two-machine system. List the factors determining the stability limit and indicate how it may be improved?
- ✓ 4. Describe the modeling of the various components of the excitation system.
- ✓ 5. Derive voltage and torque equations of synchronous machine. Draw the schematic of stator and rotor circuit of a synchronous machine and derive the basic equation of state and rotor of synchronous machine. Draw all the necessary illustrations.

6. a) Discuss the basic structure of tuning of PSS.
b) Describe the system state matrix including power system stabilizers.
- ✓ 7. a) What do you understand by static VAR compensator?
b) Explain the modeling of a transmission line.
8. Write short note on any two of following:
 - i) Phillips Heffron model
 - ii) Load modelling
 - iii) Electromechanical oscillations
 - iv) Exciters and voltage regulators

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