

**Roll No.**

**Total No. of Pages : 02**

**Total No. of Questions : 08**

**M.Tech. (EE) (2018 Batch) (Sem.-2)**

# POWER SYSTEM DYNAMICS-II

**Subject Code : MTEE-201-18**

**M.Code : 76100**

**Time : 3 Hrs.**

**Max. Marks : 60**

### INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.  
2. Each question carries TWELVE marks.

1.
  - a) Using fundamentals, derive the swing equation for a single generator connected to a parallel lines through the transformer.
  - b) A two pole 50Hz, 11kV turbo alternator has a rating of 120MW, power factor 0.861 lagging. The rotor has a moment of inertia of 10,000 kgm<sup>2</sup>. Calculate H and M.
2.
  - a) Explain why the synchronous machine rotor self inductances are constant.
  - b) Discuss the importance of small signal stability with low frequency oscillations of unregulated system.
3.
  - a) Obtain Flux linkage and Voltage equations of a synchronous machine model used in power system dynamic studies.
  - b) Discuss the large signal rotor angle stability for synchronous machine.
4.
  - a) What are direct methods for assessing stability of power system?
  - b) Explain the significance of synchronizing and damping torque analysis of a single machine system.
5.
  - a) Draw the functional block diagram of excitation control system of a synchronous generator.
  - b) Describe the role of each block with justification.

6.
  - a) Derive the equation for multi machine stability criteria.
  - b) Compare the conventional AGC control for hydro power plant with synchronous generator.
7.
  - a) What are techniques used for enhancing the stability of power system? Explain them.
  - b) Draw two equivalent circuits of synchronous machine corresponding to the two axes d and q.
8. Write notes on following :
  - a) Dynamic compensator
  - b) Frequency stability
  - c) AVR

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**