Roll No. | | | | | | | | | | | | Total No. of Pages : 01

Total No. of Questions : 08

M.Tech. (Power System) (2018 Onwards) (Sem.–1)

POWER SYSTEM DYNAMICS-I

Subject Code : MTPS-102-18

M.Code : 75775

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1.Attempt any FIVE questions out of EIGHT questions.

2.Each question carries TWELVE marks.

Q1. a) Explain clearly how the angular stability problem occurs in power system.

b) Derive swing equation for multi-machine system.

Q2. a) Give detailed description of steady state stability evaluation of SMIB System.

b) A generator is connected to an infinite bus through an external impedance of jXe. If Eb = Vto = 1.0 p.u. Find the initial conditions. Assume xe = 0.28 p.u. Consider the generator data: xd = 1.8, xq = 1.7 , x'd = 0.18, x 'q = 0.25, Ra = 10.0, T "d = 0.5 sec, " = 0.1 sec, H = 5 Sec and f q T B = 50 Hz.

Q3. Why park's transformation is required? Apply it to transform electrical and mechanical equations of synchronous machine.

Q4. What are the assumptions made in the derivation of basic equations for a synchronous machine? Derive electrical and mechanical equations of the machine.

Q5. Why the excitation control is required for an alternator? Show the inclusion additional variables in the mathematical model of a synchronous machine and discuss about its final state space model.

Q6. Give complete block diagram for developing simplified model of synchronous machine. Apply Routh-Hurwidz criterion for stability analysis.

Q7. Draw block diagram for the structure of a Power System stabilizer. Explain its various components in details.

Q8. Write short notes on following :

a) Per unit system b) Philips-Heffron model c) Small signal model.

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.