

Total No. of Questions : 8

M.Tech. (Power System) (2018 Batch) (Sem.-1)

POWER SYSTEM DYNAMICS-I

Subject Code : MTPS-102-18

Paper ID : [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. Differentiate between transient stability, steady state stability and dynamic stability. Derive swing equation for a single machine infinite bus system. Discuss the various methods of improving small signal stability.
- Q2. Draw the model of a synchronous machine showing various current and voltage variables involved in seventh order model of a synchronous machine. Write down various equations in this model.
- Q3. Draw and explain the model of a detailed excitation control system. Explain different IEEE models for use in transient and small signal stability studies.
- Q4. Sketch the block diagram representation of the small signal model of a SMIB system. Represent the dynamic characteristics of system in terms of K constants and explain qualitative aspects of K constants.
- Q5. Explain the flux linkage state space model of a synchronous machine in $d-q$ frame of reference.
- Q6. Write short notes on the following :
 - (i) Load modelling for stability studies
 - (ii) Modelling of induction motor
- Q7. Explain the utility of power system stabilizer (PSS) along with automatic voltage regulator. Explain the design procedure of various parts of a power system stabilizer and develop its transfer function.
- Q8. Explain the mathematical modelling of governor for steam and hydraulic turbines. Derive their transfer function and draw block diagram.