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

Total No. of Questions : 8

M.Tech.(EE) (2018 Batch) (Sem.–1)
POWER SYSTEM DYNAMICS-I
Subject Code : MTEE-102-18
Paper ID : [75216]

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

Ql. Draw the model of a synchronous machine showing various current and voltage variables involved in a seventh order model of synchronous machine. Write down various stator and rotor equations in this model.

Q2. What is Park's transformation? What are Park's transformation matrices in power variance and power invariance forms? Apply Park's transformation to a system of three phase voltages v_a, v_b, and v_c to obtain v_d, v_q and v_o.

Q3. Draw the model of a SMIB system in state variable form (consider classical model only). How its small signal stability is calculated using Eigen value analysis?

Q4. What is the purpose of an excitation system and what are various types of excitation systems used in a synchronous machine? Explain representation of IEEE Type AC1A excitation system.

Q5. Draw Philips Heffron model of synchronous machine explaining K1 to K6 constants.

Q6. What is the need of power system stabilizer in power systems? Explain the design procedure of power system stabilizer.

Q7. Explain induction motor modelling for stability studies.

Q8. Explain the difference between basic parameters and operational parameters of a synchronous machine. How estimation of synchronous machine parameters through operational impedance is performed?