Reg. No. :

Question Paper Code : **X86867**

M.E./M.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2021
Second Semester
Power Systems Engineering
PS 5201 – POWER SYSTEM DYNAMICS
(Regulations 2017)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   **(10×2=20 Marks)**

1. Draw the systematic diagram for 3 phase synchronous machine.

2. Differentiate between stator self and stator mutual inductances.

3. What are the types of excitation system ?

4. Mention the electrical analogue of hydraulic turbine.

5. Define rotor angle stability.

6. How does the global stability differ from local stability ?

7. Define AVR.

8. What are the function of controllers used in small signal stability analysis ?

9. State the phase lead compensation.

10. Comparison between delta omega and delta p-omega stabilizers.

PART – B   **(5×13=65 Marks)**

11. a) Discuss the procedure used to compute steady state values of synchronous machines.

(OR)

    b) Explain the two axis model of the synchronous machine with amortisseur windings neglected.

12. a) Draw the schematic of the potential source controlled rectifier system and explain the operation in detail.

(OR)

b) Draw the functional block diagram of a typical excitation system and explain the elements in detail.

13. a) Briefly explain the fundamental concepts of stability of dynamics systems.

(OR)

b) Briefly explain the Single-Machine Infinite Bus (SMIB) configuration.

14. a) Explain the block diagram representation of small signal model of single machine infinite bus system with K constant.

(OR)

b) Draw the schematic diagram of P omega stabilizer and delta omega stabilizer and compare their properties and operation in detail.

15. a) Discuss the role of power system stabilizers for the enhancement of small signal stability.

(OR)

b) Briefly explain the phase lead compensation of small signal compensation.

PART – C (1×15=15 Marks)

16. a) Derive the various basic equations governing synchronous machine and also write the basic assumptions necessary to develop basic equations.

(OR)

b) Briefly explain the special characteristics of hydraulic plant and also its classical transfer functions.

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