Assignment 8

Due on 2019-09-25, 23:59 IST.

The due date for submitting this assignment has passed.

As per your records you have not submitted this assignment.

1. Find the maximum steady state power capability of a system consisting of a generator equivalent reactance of 0.08 pu connected to an infinite bus through a series reactance of 0.1 pu. The terminal voltage of the generator is held at 1.07 pu and the voltage of the infinite bus is 1.0 pu.

   Accepted Answers:
   - [1.05 pu]
   - [1.0 pu]
   - [0.95 pu]
   - [1.1 pu]

2. Which one of the following methods is used to improve power system transient stability?

   - Improved steady-state stability
   - High-speed fault reclosing
   - Single pole switching
   - All of the above

   Accepted Answers:
   - All of the above

3. The surge developed by the motor in case of armature controlled DC generator is

   - Proportional to field current and armature current
   - Proportional to armature flux and armature current
   - Both (a) and (b) are correct
   - None of the above

   Accepted Answers:
   - Both (a) and (b) are correct

4. A 400 kW, 4-pole synchronous generator rated 1000 V, 50 Hz has been connected to a 10 kV bus. If the input to the generator is suddenly boosted to 6000 V by a step change, the acceleration of the generator field current is 0.01 pu/s.

   Accepted Answers:
   - 0.01 pu/s
   - 0.02 pu/s
   - 0.03 pu/s
   - 0.04 pu/s

5. A synchronous generator capable of developing 500 kW power per phase, operates at a power angle of 60°. If the input to the system is suddenly boosted to 1000 V by a step change, how much does the input shaft power increase suddenly without loss of stability? Assume that thermal effects are negligible.

   Accepted Answers:
   - 500 kW
   - 1000 kW
   - 1500 kW
   - 2000 kW

6. On a three-phase, 60 Hz, synchronous generator connected to an infinite bus, the maximum real power that can be transferred to the infinite bus is 1.2 pu per phase. The mechanical input to the generator is 0.8 pu per phase. The inertia constant of the generator is 5 seconds. Find the natural frequency of oscillations of the system.

   Accepted Answers:
   - 0.8 Hz
   - 1.5 Hz
   - 2 Hz
   - 2.5 Hz

7. Convert the Laplace equation given necessary and sufficient condition of stability for

   Linear system
   - Non-linear system
   - Both linear and non-linear system
   - None

   Accepted Answers:
   - Both linear and non-linear system

8. In the state space analysis, the stability depends upon

   - Both A and B
   - Both A and C
   - Only C
   - None

   Accepted Answers:
   - None

9. In the hybrid storage system which of the following device help to compensate for high frequency switching transients?

   - Super capacitor
   - Battery
   - None of the above

   Accepted Answers:
   - Super capacitor

10. A balanced three-phase induction motor is supplied in steady state by a balanced three-phase voltage source with a phase voltage of 120 V rms. The load draws a total of 10 kW of power factor of 0.8 lagging. Calculate the magnitude of the per-phase line current.

   Accepted Answers:
   - 5.29 A
   - 10.58 A
   - 10.58 A
   - 21.16 A

   Accepted Answers:
   - 21.16 A