GALGOTIAS UNIVERSITY

ADMISSION NUMBER

School of Engineering

M.Tech Power System Engineering
Semester End Examination - Aug 2024

Duration : 180 Minutes
Max Marks : 100

Sem II - G2PI203T - Power System Dynamics and Stability

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Define transient stability limit.	K1(2)
2)	Explain the concept of saturation in power systems. What are its determental effects on system stability.	K2(4)
3)	Comprehensively explain the differences between stability and loss of synchronism.	K2(6)
4)	A generator is connected to a constant voltage bus through an external reactance of 0.3 pu. The synchronous reactance of the generator is 0.2 pu and the voltage magnitude of the constant voltage bus is 1.0 pu with its angle being 0°. The generator delivers 0.9 pu power to the constant voltage bus when the angle of its terminal voltage is 15. Illustrate and determine the magnitude and angle of its internal emf.	K3(9)
5)	Discuss the coordination between main and the pilot exciters. And also highlight the effect of their malfunctionin on the system stability.	K3(9)
6)	Discuss the effect of automatic voltage regulators on system stability.	K5(10)
7)	A synchronous generator capable of developing 500 MW operates at a load angle of 8°. Determine by how much the input shaft power can be increased suddenly if the stability is to be maintained?	K4(12)
8)	Examine the application of equal area criterion during sudden loss of one of the parallel line.	K5(15)
9)	A generator is connected to an infinite bus by a purely inductive network delivering 1 pu power. The maximum steady state power limit of the generator is 2 pu. Output of the generator reduces to zero due to the occurrence of a three-phase fault at the generator terminal. After tc seconds the fault is cleared restoring the original network. This makes the rotor angle swing to be max = 110° (electrical). Examine and determine its rotor angle at tc.	K5(15)
10)	Discuss modified Euler's method for the solution of Swing equation.	K6(18)