Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Department of Research & Development

Mid - Term Examinations - SEPTEMBER 2024

Odd Semester: Ph.D. Course Work	**Date**: 28 /09/2024
Course Code: EEE802	**Time**: 2:00pm – 3:30pm
Course Name: Power System Modeling & Analysis	**Max Marks**: 50
Department: EEE	**Weightage**: 25%

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 5 marks.		**4Qx5M=20M**
1	Analyze the significance of the Q-|v| interaction in maintaining voltage stability. How can reactive power compensation techniques be optimized to handle voltage fluctuations in urban power systems?	5 Marks
2	The state administration of Andhra Pradesh has proposed bringing electricity from the RTPS to the city of Kurnool. As such, KPTCL is looking to build a new transmission line from the Raichur Transmission Point Substation (RTPS) to Kurnool in Andhra Pradesh (AP). Provide detailed recommendations for the type of transmission line that should be chosen to transfer the electricity, describe the appropriate study that should be performed, and create the data sheet needed to execute the study in accordance with IEEE standards	5 Marks
3	In what scenarios could a generator control loop fail to maintain system parameters, and how could this be mitigated through control loop design?	5 Marks
4	In a single-area system, Automatic Load-Frequency control (ALFC) ensures that the system frequency remains stable by adjusting the power output of the generators in response to load changes. Explain the principle and key components of ALFC	5 Marks

Part B

Answer ALL Questions. Each question carries 15 marks.		**2QX15M=30M**
5	Obtain the power flow solution by selecting suitable method for the given power system is shown in the below Figure 1 and justify the same what are the reasons to select that particular method.	**15 Marks**

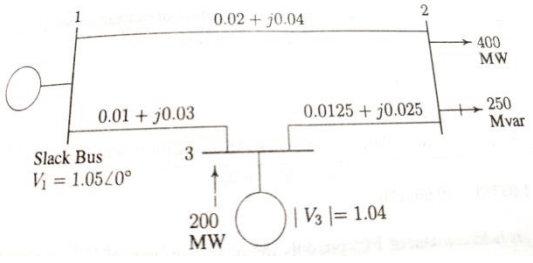

Figure 1. Single line diagram of 3 Bus system

6	A power system has a total load of 500 MW and operates at a nominal frequency of 50 Hz. Due to an unexpected increase in load, the total load rises to 525 MW. The system has a frequency droop characteristic of 5% (i.e., a 5% change in frequency corresponds to a 100% change in load). Calculate the new system frequency after the load increase	**15 Marks**