SHRI RAMSWAROOP MEMORIAL UNIVERSITY

End Semester Examination (2021-22)-Odd Semester

M. Tech (Power System Engineering) – I Year (I Sem)	
Course Name: Advanced Power system Analysis	**Code: MEE1001**
Time: 02 Hours	**Max Marks: 60**

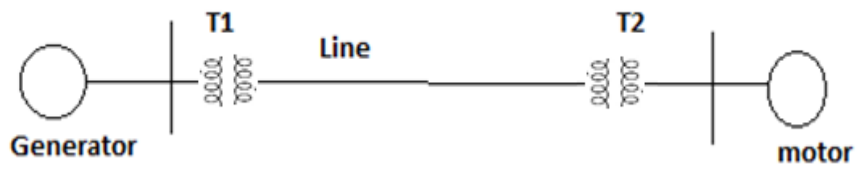
University Roll No.															

(To be filled by the Student)

Note: Please read instructions carefully:

a) The question paper has 03 sections and it is compulsory to attempt all sections.

b) All questions of Section A are compulsory; questions in Section B and C contain choice.

Section A: Very Short Answer type Questions **Attempt all the questions.**		**BL**	**CLO**	**Marks (10)**
1.	What is the importance of NRLF and Gauss Seidel method for load analysis?	BL1	CLO1	02
2.	Discuss the advantage for development of National Grid.	BL2	CLO3	02
3.	How will you see the end-use forecasting for residential and agricultural sectors?	BL1	CLO2	02
4.	Explain the term power system stability.	BL5	CLO3	02
5.	What is the importance of state estimation in power system?	BL1	CLO4	02
Section B: Short Answer Type Questions **Attempt any 03 out of 06 questions.**		**BL**	**CLO**	**Marks (30)**
1.	What is state estimation in power system?	BL1	CLO4	10
2.	Explain requirements of electric power service.	BL5	CLO3	10
3.	Explain the Central Electricity Authority of India (CEA).	BL2	CLO3	10
4.	A synchronous generator and a synchronous motor each rated 25 MVA, 11 kV having 15% sub transient reactance are connected through transformers and a line shown below. The transformer are rated 25 MVA, 11/66 kV and 66/11 kV with leakage reactance of 10 % each. The line has reactance 10% on the base of 25 MVA, 66kV. The motor is drawing 15 MW at 0.8 pf leading at terminal voltage of 10.6 kV when 3-phase fault occurs at the motor terminals. Determine the sub-transient reactance for the system with base 11kV and 100 MVA.  	BL5	CLO2	10
5.	Show the transmission loss formula in economic load dispatch.	BL2	CLO2	10
6.	Discuss in short about the Artificial Neural Networks Computational Intelligence Techniques in Power System.	BL3	CLO4	10

Section C: Long Answer Type Questions/Case Study **Attempt any 01 out of 03 questions. Answer question in appropriate word limit.**		**BL**	**CLO**	**Marks (20)**
1.	Design the Jacobian J_1, J_2, J_3 and J_4 with mathematical equation. And also describe if generator bus behave like load bus.	BL6	CLO1	20
2.	Incremental fuel costs in dollars per megawatt hour for a plant consisting of two units are given by $\lambda_1 = \frac{df_1}{dP_{g1}} = 0.0080P_{g1} + 8.0 \qquad \lambda_2 = \frac{df_2}{dP_{g2}} = 0.0096P_{g2} + 6.4$ Assume that both units are operating a t all times, that total load varies from 250 to 1250 MW, and that maximum and minimum loads on each unit are to be 625 and 100 MW, respectively. Analyze the incremental fuel cost of the plant and the al location of load between units for the minimum cost of various total loads.	BL5	CLO2	20
3.	By using least square method discuss the error in matrix form for different electrical quantities in state estimation with using suitable example. Error matrix is given below. $e = z - z_{true} = z - Hx$	BL6	CLO4	20
