

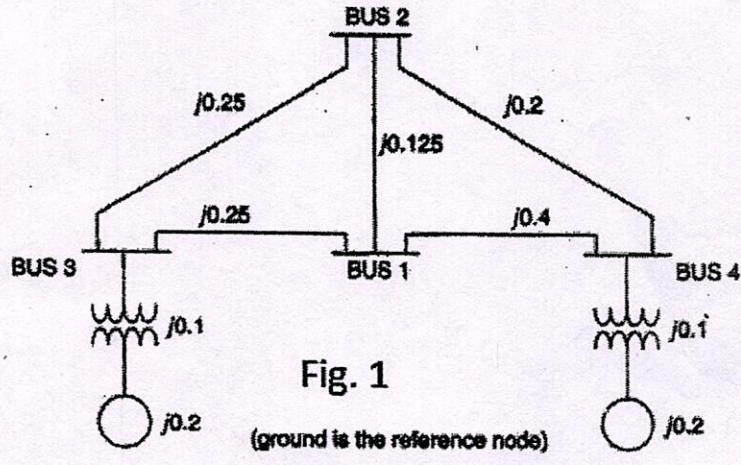
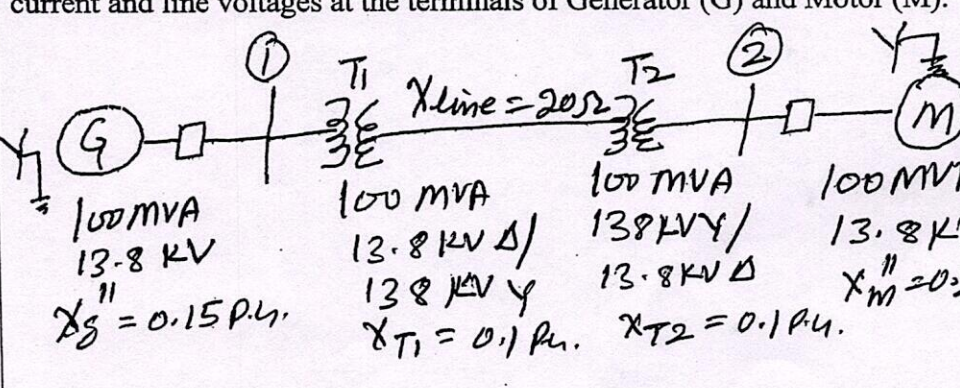
2123
M.E. Electrical Engineering (Power System)
First Semester
EE (PS)-8101: Advanced Power System Analysis

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt any five questions. All questions carry equal marks.

x-x-x

1	<p>A power system network is shown in Fig. 1. For this power system network, compute bus admittance matrix, which can be used for load flow analysis.</p>  <p style="text-align: center;">Fig. 1 (ground is the reference node)</p>	10
2	Mention the specified and unspecified quantities of N-bus power system having M number of PV buses. Draw and explain the flow chart of load flow analysis using Newton Raphson Method.	10
3	Formulate Bus Impedance Matrix for the power system network shown in Fig. 1, which can be used for short circuit analysis.	10
4	Give mathematical formulation of economic load dispatch problem including the effect of transmission losses and develop algorithm for its solution by any one method.	10
5	Give mathematical formulation of optimal power flow problem and its solution using Newton's method.	10
6	How does power system state estimation contribute to the overall reliability and operational efficiency of electrical grids? Discuss the key algorithms, measurements, and challenges associated with state estimation in power systems	10
7	Discuss the modeling of power system to perform AC-DC load flow analysis and develop algorithm for obtaining the solution of AC-DC load flow problem.	10
8	<p>For the power system shown in Figure 2, Draw +ve, -ve and zero-sequence network diagrams assuming a common base. A single line to ground fault occurs on the H.V. terminals of transformer T₂. Find the fault current and line voltages at the terminals of Generator (G) and Motor (M).</p>  <p style="text-align: center;">Figure 2</p>	10