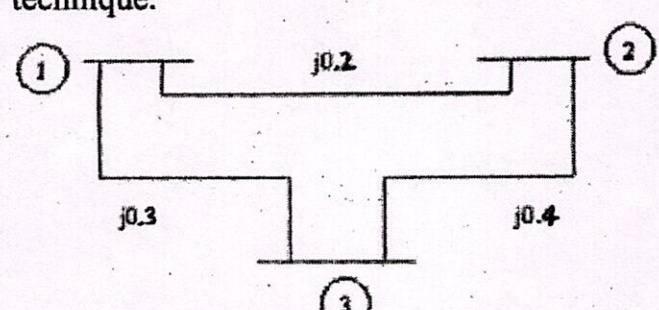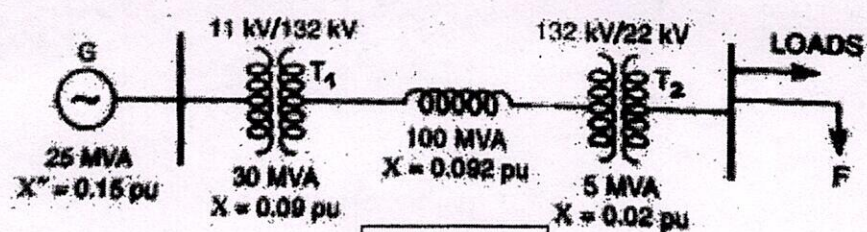**2023**
M.E. Electrical Engineering (Power System)
First Semester
EE-8101: Advanced Power System Analysis

Time allowed: 3 Hours   Max. Marks: 50

NOTE: Attempt <u>any five</u> questions. All questions carry equal marks.

x-x-x

1	For the network of Figure 1, obtain the various incidence matrices and form the bus admittance matrix using singular transformation technique. Figure 1
2	Discuss the need of load flow analysis. Explain the Newton Raphson method of Load Flow analysis using a flow chart.
3	Define short circuit capacity at a bus bar. Discuss the use of a suitable method for an unbalanced short circuit fault calculation with algorithm.
4	For the power system shown in Figure 2, obtain the fault calculations for a balanced short circuit (as shown by point F) Figure 2
5	Discuss the formulation of economic load dispatch problem without transmission losses and its solution by any one method. Also draw suitable flow chart.
6	Differentiate between economic load dispatch and optimal power flow problems. Give mathematical formulation of optimal power flow problem and its solution using Gradient method.
7	Discuss the importance of state estimation in power system. Obtain the best estimate formula using method of least squares considering a three- bus example with DC load flow analysis.
8	Explain sequential solution technique for a single-phase AC-DC load flow analysis.

x-x-x