ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END-SEMESTER EXAMINATION : JANUARY 2021** (Academic Session: 2020 – 21)		
Name of the Program:	B.Tech	**Semester:**	VII
Paper Title :	Elective – IV (Power System Analysis and Operation)	**Paper Code:**	EEE44111
Maximum Marks :	40	**Time duration:**	3 Hrs
Total No of questions:	8	**Total No of Pages:**	2
(Any other information for the student may be mentioned here)			

Answer all the Groups

Group A

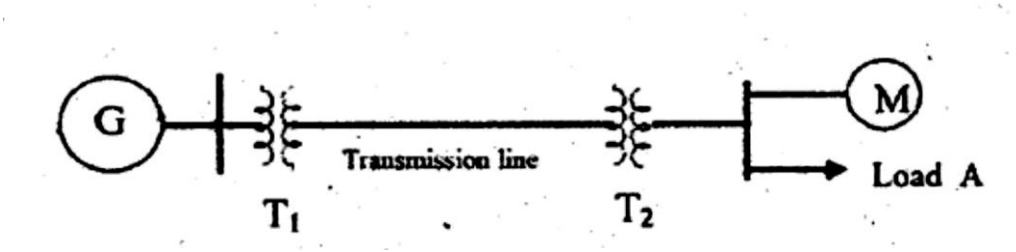
Answer all the questions of the following $5 \times 1 = 5$

1. **a)** Distinguish between the Newton-Raphson and Gauss-Seidal methods of load flow analysis.

b) Why is bus impedance matrix preferred for fault analysis?

c) What is the significance of critical clearing time?

d) Draw the impedance diagram for the given single line presentation of the power system.



e) What are the features of zero sequence currents?

GROUP –B

Answer *any three* of the following $3 \times 5 = 15$

2. What are the advantage of per unit computations?

3. What is Jacobian matrix? How the elements of Jacobian matrix are computed?

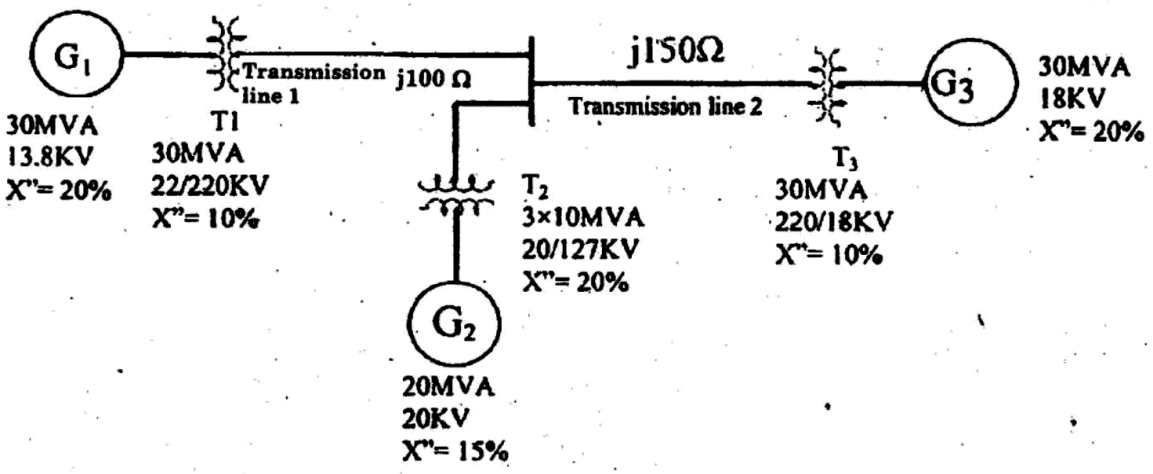
4. Derive the necessary equations to determine the fault current for a single line to ground fault. Draw a diagram showing the interconnection of sequence networks.

5. Derive the power angle equation for a single machine infinite bus system.

GROUP –C

Answer *any two* of the following $2 \times 10 = 20$

6. The single line diagram of a power system is shown in figure along with components data. Determine the new per unit values and draw the reactance diagram. Assume 25 MVA, and 20 kV as new base on generator G1.



7. Derive the step by step procedure for load flow solution from Gauss Seidal Method, if PV and PQ are present along with slack bus.

8. A 25 MVA, 13.2 KV alternator with solidly grounded neutral has a sub-transient reactance of 0.25 p.u. The negative and zero sequence reactance are 0.35 and 0.01 p.u. respectively. If a double line to ground fault occurs at the terminals of the alternator, determine the fault current and line to line voltage at the fault.
