

POWER SYSTEM ANALYSIS
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 70

Answer any FIVE Questions

All Questions carry Equal Marks

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1. Explain the procedural steps to calculate bus admittance matrix by direct method.
2. How bus impedance matrix is developed by step by step method? Describe the method with algorithm.
3. (a) Explain why voltage vector for a power system is called "State Vector" in load flow analysis. Explain its significance.
(b) Explain the procedure to incorporate Q limits for PV buses in the solution of load flow studies.
4. Draw and explain the flow chart for D.C load flow.
5. (a) Explain about fault limiting reactors.
(b) Show that 3- ϕ short circuit fault is a symmetrical fault.
6. What do you understand by symmetrical component transformation?
7. A 50 Hz transmission line 500 km long with constants given below ties up two large power areas. $R = 0.11 \Omega/\text{km}$, $L = 1.45 \text{ mH}/\text{km}$, $C = 0.009 \mu\text{F}/\text{km}$, $G = 0$
(a) Find the steady state stability limits if $|V_s| = |V_r| = 200 \text{ kV}$ (constant).
(b) What will be steady state stability limit if line capacitance is also neglected? What will be steady state limit if line resistance is neglected?
8. How do you define the transient stability of a power system? How can you model the transmission line, load and alternators in transient stability studies?