

B.Tech III Year II Semester (R09) Supplementary Examinations May/June 2016

POWER SYSTEM ANALYSIS

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 Define and explain the following:
 - (a) Tree.
 - (b) Cut set matrix.
 - (c) Bus incidence matrix.
 - (d) Basic loop incidence matrix.
- 2 Using building algorithm construct Z_{BUS} for the network whose line data is given below. Take bus 2 as reference bus.

Element	Self impedance	
	Bus code	Reactance (p.u)
1	1-2	0.2
2	2-3	0.4
3	1-3	0.3
4	1-4	0.2
5	3-4	0.5

- 3 With the help of flow chart, explain Seidel method of load flow solution with PQ buses.
- 4 Derive an expression for Jacobin elements to carryout load flow study on power system using NR method.
- 5 (a) Derive an expression for the fault current for the three phase fault.
(b) Explain the current limiting reactors in power systems.
- 6 Show that for a fully transposed transmission line that positive and negative sequence impedances are equal and also the zero sequence impedance is larger than positive and negative sequence impedances.
- 7 A power deficient area receives 25 MW over a tie line from another area. The maximum steady state capacity of the tie line is 50 MW. Find the allowable sudden load that can be switched on without loss of stability.
- 8 What are the assumptions in classical studies of transient stability? Why the swing equation is so important in the study of transient stability?
