Department of Electronics & Communication Engineering

Faculty of Engineering, Integral University, Lucknow

Assignment Sheet 1

POWER SYSTEM ANALYSIS (EE 602)

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Due Date : February 10, 2012

Problems : 10

1. Explain bus classification in power flow analysis with their known and unknown quantities.
2. In what way is Newton-Raphson method different from Gauss Seidel method?
3. Discuss the advantages of using Y_{bus} model of power system network for load flow analysis.
4. What is meant by acceleration factor in load flow solution and its best value?
5. Develop the equations for real and reactive bus powers. Show that a diagonal element of a Y_{bus} is equal to the sum of admittances directly connected to that bus and an off-diagonal element is equal to the negative of the sum of admittances directly connected between the buses.
6. For the network shown in fig.1 write the elements of Y_{bus} matrix directly by inspection.
7. For a system shown in fig. 2 form the bus admittance matrix.
8. Write down the admittance matrix for the following 4-bus system

Bus Code	Admittance
1-2	2-j8
1-3	1-j4
2-3	0.666-j2.664
2-4	1-j4
3-4	2-j8

9. A 2-bus system is shown in fig 3, $Y_{11} = Y_{22} = 1.6 \underline{|-80^0}$ pu and $Y_{12} = Y_{21} = 1.9 \underline{|100^0}$ pu Determine the voltage at bus 2 by Gauss-Seidel method after two iterations.
10. Why one of the buses in a power system is taken as reference bus for load flow solutions.

Do the assignment on A-4 sheets only. Use both side of the page. After the date of submission, assignment will not be accepted and zero marks will be allotted to the student who fail to submit the assignment on due date.