

17PS1101 - COMPUTER METHODS IN POWER SYSTEM

Instruction/week: 4 hrs.

Max. Sessional marks: 40

Univ. Exam: 3 hrs.

Univ. Exam marks: 60

UNIT-I

INCIDENCE AND NETWORK MATRICES: Graphs, Incidence matrices, Primitive network formation of network matrices by singular transformation, Bus admittance and bus impedance matrices, Branch admittance and branch impedance matrices, loop impedance and loop admittance matrices, Formation of network matrices by non-singular transformations, Branch admittance and branch impedance matrices, loop impedance and loop admittance matrices

UNIT-II

ALGORITHM FOR THE FORMATION OF NETWORK MATRICES: Algorithm for formation of bus impedance matrix, Addition of a branch, Addition of a link and modification of bus impedance matrix.

UNIT-III

THREE PHASE NETWORKS: Three phase network elements, Algorithm for formation of three-phase bus impedance matrix.

UNIT-IV

SHORT CIRCUIT STUDIES: Short circuit calculations using Z_{bus} , fault currents and voltages, short circuit calculations for balanced three phase network using Z_{bus} .

UNIT-V

LOADFLOW STUDIES: Review of basic power system load flow techniques, Decoupled and fast decoupled loadflow methods, Sparsity techniques and applications.

TEXT BOOKS:

1. "Advanced methods in power system Analysis and Dynamics" by L.P. Singh, Wiley Eastern.
2. "Power system analysis" by D.V.Ramana, Pearson publications.
3. "Modeling of power system components" by P.S.R. Murthy, BS publications.

REFERENCES:

1. "Computer methods in Power system Analysis" by Stagg and Et.Abiad, Mc-Graw Hill publishers
2. "Modern power system analysis" by D.P.Kothari&I.J.Nagarath Tata Mcgra hill publishers
3. "Power system Analysis" by HadiSaadath, Tata Mcgrahill publishers.
4. "Computer aided power system analysis" by George L.Kusic, Prentice Hall of India.