

SHANTILAL SHAH ENGINEERING COLLEGE

Instrumentation & Control Department

PAT Exam Syllabus summer 2019

Subject Name: Network Analysis

Subject Code: 3131707

Chapter No.	Content
1	Coupled Circuit and Dot Conventions: Magnetically Coupled Circuit, Faraday's law of Electromagnetic induction, Self-induced emf and self-inductance, Mutually induced emf and Mutual induction, Coefficient of coupling, Dot Convention, inductive coupling of series-parallel, Conductively coupled equivalent circuit.
2	Nodal Analysis and Mesh Analysis of resistive Circuits: Nodal Analysis of Circuits Containing Resistors and Independent and Dependent Sources – Source Transformation Theorem for circuits with independent sources – Source Transformation Theorem for circuits with Dependent sources –Nodal Analysis of Circuits Containing Dependent Sources - Mesh Analysis of Circuits with Resistors and Independent Voltage Sources- Mesh Analysis of Circuits with Independent Sources - Mesh Analysis of Circuits Containing Dependent Sources.
3	Circuit Theorems and Their Application in Electric Networks: Linearity of a Circuit and Superposition Theorem-Substitution Theorem- Compensation Theorem - Thevenin's Theorem and Norton's Theorem - Determination of Equivalents for Circuits with Dependent Sources - Reciprocity Theorem - Maximum Power Transfer Theorem - Millman's Theorem- Duality Theorem-Duality between Electricity and Magnetism
6	Initial Conditions: Initial conditions in elements, procedure for evaluating initial conditions, Solution of circuit equations by using Initial Conditions.
7	Laplace Transform Analysis and its Applications: Notions of Impedance and Admittance – Manipulation of Impedance and Admittance- Notions of Transfer Function- Equivalent circuits for inductors and capacitors – Nodal and Loop analysis in the s-domain – Switching in RLC circuits- Switched capacitor circuits and conservation of charge
8	Two –Port Networks : One port networks – driving port and transfer function for one port and two port network ,poles and zeros of network functions , Two port admittance Parameters (y parameters)– Admittance parameters analysis of terminated two- Port networks - Two port impedance Parameters (z-parameters) –Impedance and Gain calculations of terminated two- Port networks modeled by z-parameters – Hybrid parameters (h para)– Inverse Hybrid Parameters (g-para)- Transmission parameters (ABCD parameters)– Scattering parameters(S parameters)-Scattering Transfer parameters(T parameters) – reciprocity-Various Combinations of Two-Port network-Various Combinations of Two port n/w.