

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Electronics & Communication Engineering

LESSON PLAN

Subject Name: - NT

Subject Code: - EC-213A

Year: - 2ND

Semester:- 3RD

Lecture No	Unit No	Topic	COs Covered
1	-	Introduction to Subject, Introduction to basic circuit elements	CO4
2	-	KCl, KVL with their numerical problems	
3	-	Numerical problems based on Nodal and Mesh analysis	
4	-	Introduction to Laplace transform	
5	3	Characteristics and Parameters of Two Port Networks: Relationship of two-port variables, open circuit impedance parameters	
6		Short-Circuit admittance Parameters	
7		Numerical based on Z and Y parameters	
8		Transmission parameters	
9		Hybrid parameters	
10		Relationships between parameter sets	
11		Inter-connection of two port networks	
12	4	Types of Filters and their Characteristics: Filter fundamentals	CO5
13		Constant-k low pass filters	
14		m-derived low-pass filters	
15		m-derived high -pass filters	

16		Network Synthesis: Causality & Stability, Hurwitz Polynomials, Positive real functions	
17		Synthesis of one port networks with two kinds of elements.	CO5
18		Synthesis of one port networks with two kinds of elements.	
19		Synthesis of one port networks with two kinds of elements.	
20		Principles of network topology	CO1
21		Principles of network topology	
22		Graph Matrices	
23	1	Network Analysis (Time-Domain): Singularity Functions, Source-Free RC, RL	CO2
24		Series RLC, Parallel RLC circuits, Initial & Final Conditions	
25		Impulse & Step Response of RC	
26		Impulse & Step Response of RL	
27		Impulse & Step Response of Series RLC	
28		Impulse & Step Response of Parallel RLC circuits.	
29	2	Network Analysis (using Laplace Transform): Circuit Element Models, Transient Response of RC to various excitation signals such as step, ramp	CO2
30		Transient Response of RC to various excitation signals such, impulse and sinusoidal excitations using Laplace transform.	
31		Transient Response of RL to various excitation signals such as step	
32		Transient Response of RLC to various excitation signals such as step	
33			Network Functions: Terminal pairs or Ports, Network functions for one-port and two-port networks
34		Poles and zeros of Network functions,	

35	Time domain behavior from the pole and zero plot
36	Restrictions on pole and zero Locations for driving point functions
37	Restrictions on pole and zero Locations for transfer functions.

TEXT BOOKS:

1. Fundamentals of Electric Circuits: Charles K. Alexander, Matthew N. O. Sadiku, McGraw Hill Education
2. Network Analysis: M.E. Van Valkenburg, PHI

REFERENCE BOOKS:

1. Network Analysis & Synthesis: F. F. Kuo, John Wiley.
2. Circuits & Networks: Sukhija & Nagsarkar, Oxford Higher Education.
3. Basic Circuit Theory: DasoerKuh, McGraw Hill Education.
4. Circuit Analysis: G.K. Mithal, Khanna Publication.

Online Resources:

<https://archive.nptel.ac.in/courses/108/105/108105159/>