

# Bhoj Reddy Engineering College for Women: Hyderabad

## Department of Electronics and Communication Engineering

Lesson plan of faculty member for the academic year 2020–21

Class: II B Tech

Branch-Section: ECE-A

Semester: I

Subject: Network Analysis and Transmission Lines (NATL)

Lectures per week: 3

Lecture Number	Topics to be covered	Date (s)
<b>UNIT – I</b>		
1	Introduction to Networks, Network Topology.	1 September 2020
2	Basic cut set and tie set matrices for planar networks.	2 September 2020
3	Magnetic Circuits, Self and Mutual inductances, dot convention.	3 September 2020
4	Numerical Problems related to cut set and tie set matrices.	8 September 2020
5	Impedance, reactance concept, Impedance transformation and coupled circuits.	9 September 2020
6	Co-efficient of coupling, equivalent T for Magnetically coupled circuits.	10 September 2020
7	Ideal Transformer, Numerical Problems related to Self and Mutual inductances, dot convention.	15 September 2020
<b>UNIT-II</b>		
8	Transient and Steady state analysis of RC.	16 September 2020
9	Transient and Steady state analysis of RL.	17 September 2020
10	Transient and Steady state analysis of RLC Circuits.	22 September 2020
11	Sinusoidal, Step and Square responses. Numerical Problems related to RC, RL, RLC Circuit.	23 September 2020
12	RC Circuits as integrator, RC Circuits as differentiators, Numerical Problems related to RC Circuits.	24 September 2020
13	Second order series and parallel RLC Circuits.	29 September 2020
14	Root locus, Damping factor, over damped, under damped, critically damped cases.	30 September 2020
15	Quality factor and bandwidth for series resonance.	1 October 2020
16	Quality factor and bandwidth for parallel resonance.	6 October 2020
17	Resonance curves, Numerical Problems related to quality factor and bandwidth.	8 October 2020
<b>UNIT-III</b>		
18	Two port network parameters, Z, Y parameters.	13 October 2020
19	Two port network ABCD, h and g parameters.	14 October 2020
20	Characteristic Impedance.	15 October 2020
21	Image transfer constant, Image, and Iterative Impedance.	27 October 2020
22	Network function, driving point and transfer functions – using transformed (S) variables, Poles and Zeros.	28 October 2020
23	Numerical Problems related to Two port network parameters, Revision of Unit – I and II for I Mid Term Examinations.	29 October 2020
24	Standard T, $\pi$ , L Sections.	10 November 2020
25	Characteristic impedance.	11 November 2020
26	Image transfer constants.	12 November 2020
27	Design of Attenuators.	17 November 2020
28	Impedance matching network. Numerical Problems related to characteristic impedance, image transfer constants.	18 November 2020
<b>UNIT-IV</b>		
29	Transmission Lines - I: Types, Parameters.	19 November 2020
30	Transmission Line Equations, Primary & Secondary Constants.	24 November 2020
31	Equivalent Circuit, characteristic Impedance.	25 November 2020
32	Propagation Constant, phase, and Group Velocities. Numerical Problems related to characteristic impedance.	26 November 2020

33	Infinite Line Concepts, lossless / Low Loss Characterization,	1 December 2020
34	Types of distortion, condition for distortion less line.	2 December 2020
35	Minimum Attenuation, Loading - Types of Loading. Numerical Problems related attenuation.	3 December 2020
<b>UNIT-V</b>		
36	Transmission Lines – II	8 December 2020
37	Input Impedance Relations.	9 December 2020
38	SC and OC Lines.	10 December 2020
39	Numerical Concepts related to input impedance relations.	15 December 2020
40	Reflection Coefficient, VSWR. $\lambda/4$ , $\lambda/2$ , $\lambda/8$ Lines.	16 December 2020
41	Impedance Transformations.	17 December 2020
42	Smith Chart – Introduction and Configuration.	22 December 2020
43	Smith Chart – Applications.	23 December 2020
44	Single Stub Matching.	24 December 2020
45	Numerical Problems related to single stub matching.	29 December 2020
46	Revision of Unit – III, IV and V.	30 December 2020
47	Previous Question Papers-Discussion.	31 December 2020

**Textbooks:**

1. Van Valkenberg, "Network Analysis", 3/e, Pearson, 2016
2. JD Ryder, "Network, Lines and Fields", 2/e, PHI, 1999.

**Reference books:**

1. J. Edminister and M. Nahvi, "Electric Circuits", Schaum's Outlines, Mc Graw Hills Education, 1999.
2. William Hayt and Jack E Kemmerly, "Engineering Circuit Analysis", 8/e, MGH, 1993.
3. JD. Kraus, "Electromagnetics with Applications", 5/e, TWH.
4. Umesh Sinha, "Transmission Lines and Networks", Satya Prakashan, 2001, (Tech India Publications), New Delhi.

Name and signature of the faculty: Saba Sultana ----

Name and signature of Head of the Department: Ms N Shribala ----