Course Number and Name

BEE402&Electrical Network Analysis & Synthesis

Credits and Contact Hours

3&45

Course Coordinator's Name

Mrs.Sherine

Text Books and References

Text Books:

1. Sudhakar and Shyammohan, "Network Analysis & Synthesis".
2. Paranjothi S.R. "Electrical Circuit Analysis", New Age International, 2nd Edition 1994.
3. Van Valkenberg M.E. "network Analysis" – Prentice Hall of India Pvt Ltd. Delhi, 3rd edition 1994.

Reference Books:

1. EuoF.F."Network Analysis and Synthesis" – Wiley international Edition, 2nd edition – 1996.
2. http://www.mathworks.com/access/helpdesk/help/toolbox/Network theory/

Course Description

To give the students a fair knowledge on the networks and on the filter designs.

Prerequisites	Co-requisites
Circuit Theory	Nil

required, elective, or selected elective (as per Table 5-1)

Required

Course Outcomes (COs)

CO1: To understand basics of network topologies and the tieset and cutset schedules.
CO2: Able to relate pole and zero locations to characteristics of time-domain functions and frequency domain functions.
CO3: Analyze the given network using different two port network parameters.
CO4: Understand basics of network synthesis.
CO5: Identify the characteristics of Filters and determine the parameters for the design of various Filters& attenuators.

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l
CO1	M	H	L	L	M		M			M	L	M
CO2	H	H	L	L	M					L	L	
CO3	H	M		H	H		M			L	L	
CO4	H	M		H	H		M					
CO5	H	M	M	H	H		M			L	L	M

List of Topics Covered

UNIT I NETWORK THEORY 9

Network graph, tree and cut sets – tie sets and cut sets schedules – Y shift and I shift – Primitive impedance and admittance matrices.

UNIT II LAPLACE AND FREQUENCY DOMAIN ANALYSIS 9

S Domain network, Driving and Transfer impedence and their properties – Transform network analysis – Poles and Zeros of network functions – Time response from pole zero plots-Frequency response of RLC network – Frequency response from pole zero plots.

UNIT III TWO PORT NETWORKS 9

Characterization of two port networks in term of Z, Y, H, T parameters and A, B, C, D parameters – Network equivalence – relation between network parameters – analysis of T ladder bridge – T and lattice networks – Transfer function of terminated two port networks.

UNITIV ELEMENTSOFNETWORKSSYNTHESIS 9

Reliability of one port network – Hurwitz polynomial and properties – Positive and Real function and properties – synthesis of RL, RC and LC networks.

UNIT V DESIGN OF FILTERS 9

Filters and attenuator – Design of constant K, M – derived and composite filters – qualitative treatment of a active filters – Butterworth and Chebyshev filters.