Maulana Abul Kalam Azad University of Technology, West Bengal
(Formerly West Bengal University of Technology)
Syllabus for B. Tech in Electronics & Communication Engineering
(Applicable from the academic session 2018-2019)

Course Code : EC 304	Category : Core Courses
Course Title : Network Theory	Semester : Third
L-T-P : 3-0-0	Credit:3
Pre-Requisites:	

Detailed contents:

Module I   8L

Node and Mesh Analysis, matrix approach of network containing voltage and current sources, and reactances, source transformation and duality. Network theorems: Superposition, reciprocity,
Thevenin's, Norton's, Maximum power Transfer, compensation and Tallegen's theorem as applied to AC. circuits.

Module II   6L

Trigonometric and exponential Fourier series: Discrete spectra and symmetry of waveform, steady state response of a network to non-sinusoidal periodic inputs, power factor, effective values, Fourier transform and continuous spectra, three phase unbalanced circuit and power calculation.

Module III   6L
Laplace transforms and properties: Partial fractions, singularity functions, waveform synthesis, analysis of RC, RL, and RLC networks with and without initial conditions with Laplace transforms evaluation of initial conditions.

Module IV   12L

Transient behavior, concept of complex frequency, Driving points and transfer functions poles and zeros of immittance function, their properties, sinusoidal response from pole-zero locations, convolution theorem and Two four port network and interconnections, Behaviors of series and parallel resonant circuits, Introduction to band pass, low pass, high pass and band reject filters.

Basic idea of Circuit Synthesis, Cauer & foster forms, examples

Text/Reference Books
1. Van, Valkenburg.; "Network analysis"; Prentice hall of India, 2000
2. Sudhakar, A., Shyammohan, S. P.; "Circuits and Network"; Tata McGraw-Hill New Delhi, 1994.
3. A William Hayt, "Engineering Circuit Analysis" 8th Edition, McGraw-Hill Education

Course Outcomes:
At the end of this course students will demonstrate the ability to
1. Understand basics electrical circuits with nodal and mesh analysis.

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2. Appreciate electrical network theorems.
3. Apply Laplace Transform for steady state and transient analysis.
4. Determine different network functions.
5. Appreciate the frequency domain techniques.