13EE2102-CIRCUITS & NETWORKS
(Common for EEE & ECE)

Lectures/Week:4Hrs.   Max. Sessional marks: 40
End Exam. Duration:3Hrs   End Exam.Marks:60

UNIT –I
Network theorems: Superposition, Reciprocity, Thevenin's and Norton's theorems, Maximum power transfer theorem, Millman's theorem, Application of these theorems to DC and AC networks
Locus diagrams of RL & RC series circuits, Locus diagrams of two branch parallel circuits.

UNIT-II
Three phase circuits: Advantages of three phase systems - Phase sequence - Star - Delta transformation - Balanced & unbalanced three phase systems - Magnitude & phasor relationships between phase and line voltages & current in balanced star and delta circuits - Analysis of balanced and unbalanced three phase circuits- measurement of three phase power.

UNIT-III
Two port Network Parameters - Open circuit parameters – Short circuit parameters – Transmission parameters - inverse transmission parameters - Hybrid parameters – Inverse hybrid parameters - Inter-relationships of different parameters –Condition for reciprocity and symmetry of networks with different two port parameters - Terminated two port networks – Image parameters.

UNIT-IV
Network functions : Single port & multi port networks - Immitance functions of two port networks – Necessary conditions for driving point functions & transfer function – Complex frequencies – Poles and zeros – Time domain response from pole zero plots – Restrictions on pole-zero locations.

UNIT-V
Transients: Transient response of RL , RC & RLC circuits for DC & AC excitations using time domain & Laplace transform techniques - Determination of initial conditions - Concept of time constant – Transformed circuits -Transient response of RL , RC & RLC circuits for other types of signals using Laplace transform methods.

TEXT BOOKS:

1. "Network Analysis" by Vanvalkenberg 3rded, PHI publishers
2. "Circuit Theory" by A.Chakarabarti - Dhanpat Rai publishers
3. "Circuits & Systems" by K.M.Soni – Kataria Publishers

REFERENCES:

1. "Engineering Circuit Analysis" by Hayt & Kemmerly, TMH publishers
2. "Electric Circuits" by Mahmood Nahvi & Joseph Edminister, Schaum's outline series
    (Fifth Edition)