SUBJECT NO-EC21203, SUBJECT NAME- NETWORK THEORY

LTP- 3-1-0,CRD- 4

SYLLABUS :-

Pre-requisites: NoneNetwork components: passive and active components, physical phenomenon and circuit interpretation of network using appropriate models. Signals: significance of eigen function, Fourier transform and Laplace transform and their comparison. Transient and steady state response of RC, RL and RLC circuits using Laplace transform. Network equations and solutions using Laplace transform, initial conditions. Degenerate networks. Graph theory: basic definitions Ã¢ÂÂ loop (or tie set), cut-set, mesh matrices and their relationships, applications of graph theory in solving network equations. Network functions: driving point function, transfer function, concepts of poles and zeros. Impulse response and convolution. Bode plots. Two-port networks: network parameters (z parameters, y parameters, h parameters, ABCD matrix, transmission matrix), reciprocity theorem, image parameter concepts. Transmission lines: balanced/unbalanced lines, lumped-parameter model, characteristic impedance, propagation aspects. Elements of network synthesis: positive real functions, basic concepts of insertion-loss synthesis; Approximation functions for filters - Design of Butterworth and Chebyshev filters.