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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations July-2021

NETWORK ANALYSIS

(Electronics and Communication Engineering)

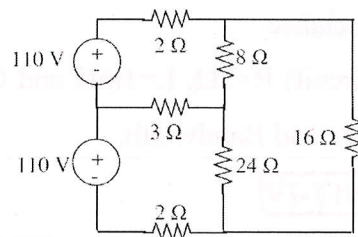
Time: 3 hours

Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

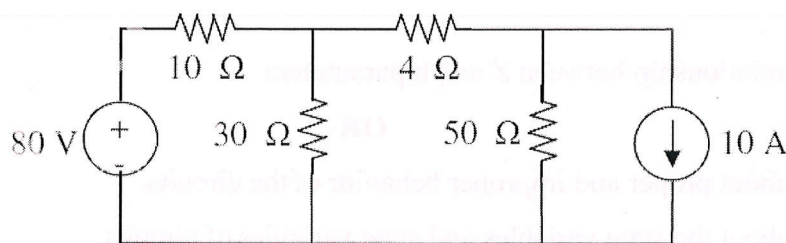
UNIT-I

- 1 a Explain the concept of source transformation? 6M
 b Using nodal analysis find all branch currents for the following circuit 6M



OR

- 2 a State and explain milliman's theorem. 6M
 b Verify Superposition theorem for 4Ω resistor for the following circuit 6M



UNIT-II

- 3 a What is time constant? What are the time constants of series RL and RC circuits? 6M
 b A parallel RLC circuit is supplied with a voltage source of 230 V, 50Hz. Determine circuit current and power factor if $R=40\Omega$, $L=0.2H$ and $C=50\mu F$. 6M

OR

- 4 a Define power factor, apparent power, active power and reactive power. 6M
 b The impedances of parallel circuit are $Z_1 = (4+j6)$ ohms and $Z_2 = (12-j8)$ ohms. If the applied voltage is 220V, find (i) current and power factor of each branch (ii) overall current (iii) power consumed by each impedance. Draw the phasor diagram. 6M

UNIT-III

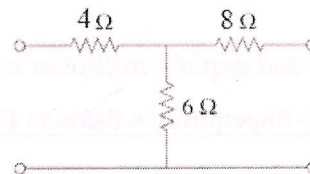
- 5 a Obtain the expression for resonant frequency, bandwidth and Q-factor for parallel R-L-C circuit. 6M
- b A series RLC circuit has $R=10\Omega$, $L=0.5H$ and $C=40\mu F$. The applied voltage is 100V. Find 6M
- Resonant frequency & Quality factor of a coil
 - Bandwidth
 - Upper and lower Half power frequencies
 - Current at resonance & current at half power points
 - Voltage across inductance & voltage across capacitance at resonance.

OR

- 6 a Define and explain self and mutual inductance. 6M
- b In a parallel resonance circuit (Tank circuit) $R=2\Omega$, $L=1mH$ and $C=10\mu F$, Find the Resonant frequency, Dynamic impedance and Bandwidth. 6M

UNIT-IV

- 7 a Find the h- parameters for the following circuit. 6M



- b Find the relationship between Z and h parameters. 6M

OR

- 8 a Explain about proper and improper behavior of the circuits. 6M
- b Explain about the state variables and state variables of circuits. 6M

UNIT-V

- 9 a What is a constant K low pass filter, derive its characteristics impedance. 6M
- b Explain the classification of pass band and stop band in detail. 6M

OR

- 10 a Derive the expression for characteristic impedance in a pass band filter. 6M
- b Derive necessary expressions for m-derived high pass filter. 6M

*** END ***