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

B.Tech II Year I Semester Regular Examinations Feb-2021
NETWORK THEORY

(Electronics & Communication Engineering)

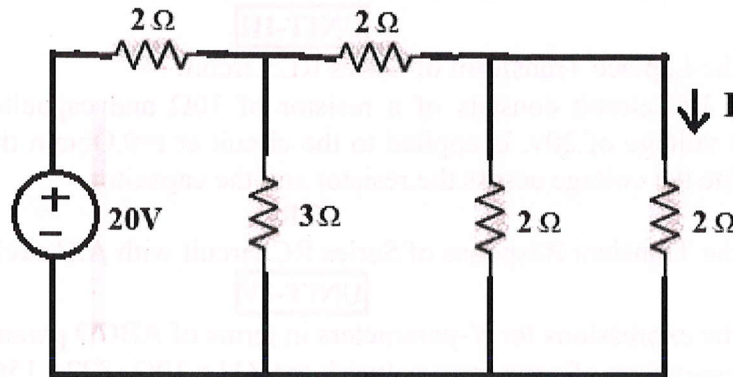
Time: 3 hours

Max. Marks: 60

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

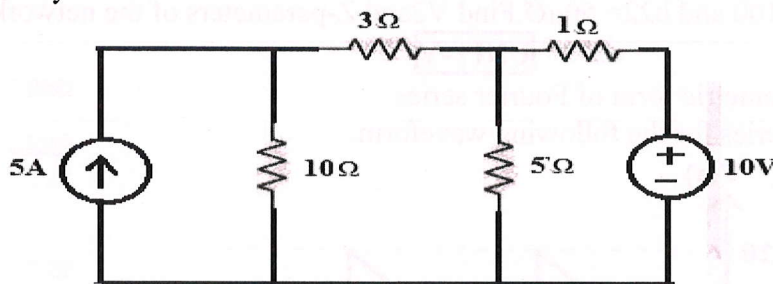
UNIT-I

- 1 a State and prove Milliman's theorem. 6M
b Verify reciprocity theorem for the network shown in below figure. 6M



OR

- 2 a Explain about Mesh analysis and write the steps for writing mesh analysis. 6M
b Determine the current in 10Ω resistor for the following network by using nodal analysis. 6M

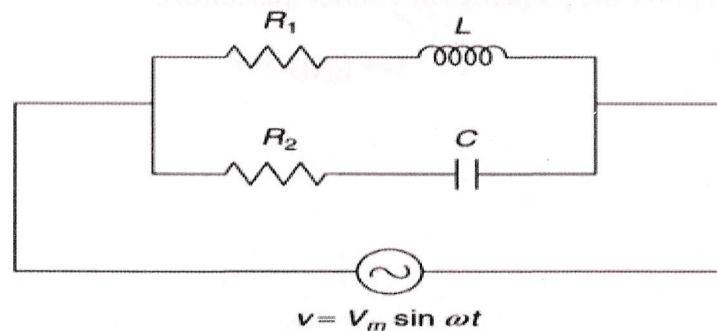


UNIT-II

- 3 a Explain about classification of filters. 4M
b Explain about Constant-K low-pass filter in detail. 8M

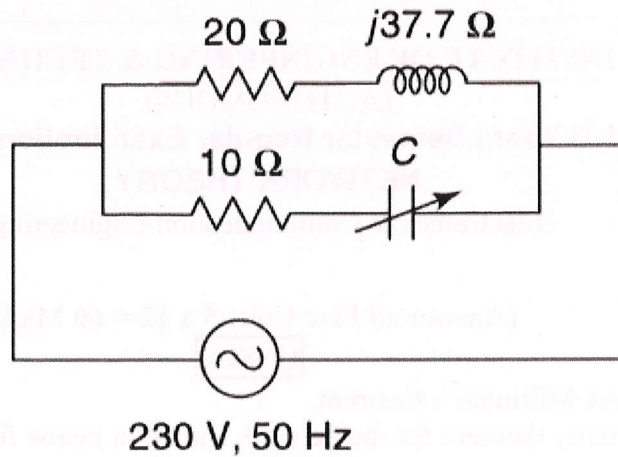
OR

- 4 a Derive the expression of resonant Frequency of the following circuit. 6M



b Find the value of C in the circuit shown to get resonance.

6M

**UNIT-III**

- 5 a Derive the Laplace Transform of Series RL Circuit. 6M
 b A series RC circuit consists of a resistor of 10Ω and capacitor of 0.1 F with a constant voltage of 20v , is applied to the circuit at $t=0$. Obtain the current equation. Determine the voltage across the resistor and the capacitor. 6M

OR

- 6 Derive the Transient Response of Series RC circuit with A.C excitation. 12M

UNIT-IV

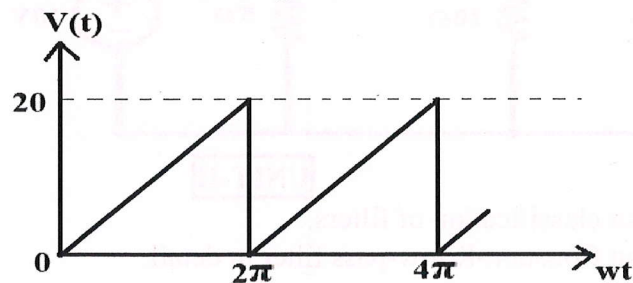
- 7 a Derive the expressions for Y-parameters in terms of ABCD parameters. 6M
 b The Z-parameters of a two-port network are $Z_{11}=10\Omega$, $Z_{22}=15\Omega$, $Z_{12}=5\Omega$ and $Z_{21}=5\Omega$. Find the equivalent T-network and ABCD parameters. 6M

OR

- 8 a Derive the expressions for Chain parameters in terms of Z-parameters. 6M
 b The hybrid parameters of a two-port network is shown in figure are, $h_{11}=1\text{K}$, $h_{12}=0.003$, $h_{21}=100$ and $h_{22}=50\mu\text{S}$. Find V_2 and Z-parameters of the network. 6M

UNIT-V

- 9 a Derive the Trigonometric form of Fourier series. 6M
 b Find the Fourier series for the following waveform. 6M

**OR**

- 10 Write and prove the properties of Fourier transforms. 12M

*** END ***