

(DEE 212)

B. Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the End of Second Year)

ELECTRICALS AND ELECTRONICS ENGINEERING

Paper - II : Network Analysis - I

Time : 3 Hours

Maximum Marks : 75

Answer question No.1 compulsory

(15 × 1 = 15m)

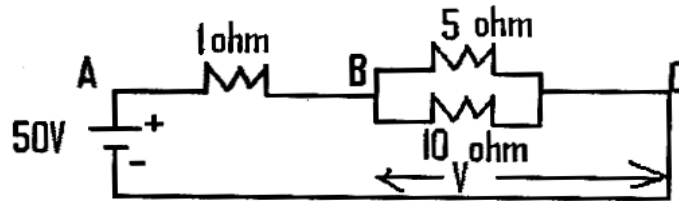
Answer any ONE question from each unit

(4 × 15 = 60m)

- 1) a) Define Current.
- b) Define KVL.
- c) Draw VI Characteristics of Inductor.
- d) Write equation for energy stored in capacitor.
- e) Define Reciprocity Theorem.
- f) Define Thevenin' s Theorem.
- g) Define Form Factor
- h) Define RMS value.
- i) What is Power Factor?
- j) Write expression for Complex Power.
- k) Define Resonance.
- l) Define Bandwidth.
- m) Write initial conditions for series RC circuit.
- n) Write expression for current response of series RL circuit.
- o) Write the command for end statement.

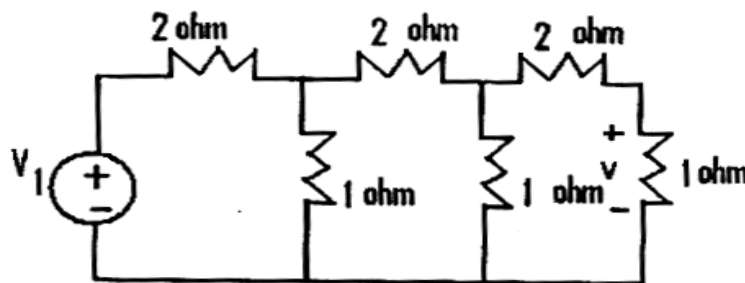
UNIT - I

- 2) a) What are the passive and active elements? Explain the volt - current relationship of passive elements with examples?
- b) In the figure below find the value of R such that the power dissipated in the 5 ohm resistor is 100 W. Assume the internal resistance of the battery of 50 V to be 1 ohm.



OR

- 3) a) Derive the expressions for n capacitors connected in series.
- b) In the figure below, find 'V₁' using Kirchoff's laws if v = 100 volts.

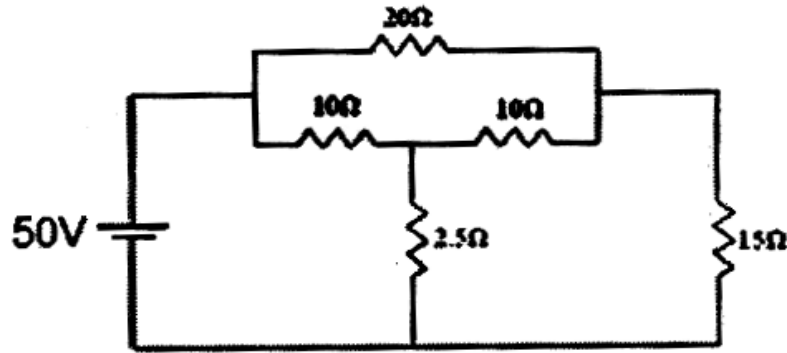


UNIT - II

- 4) a) Define the following terms :
- i) Admittance
 - ii) Conductance
 - iii) Susceptance
- b) A 50Hz sinusoidal voltage applied to a single phase circuit has its RMS value of 200V. Its value at t=0 is 28.3 volt positive. The current drawn by the circuit is 5A RMS and lags behind the voltage by one sixth of a cycle. Write the expressions for instantaneous values of voltage and current.

OR

- 5) a) State and explain Norton's Theorem.
- b) Find Current through 15 Ω resistor using Thevenin's Theorem.



UNIT - III

- 6) a) What is resonance? Sketch the resonance curves for a series resonant circuit with variable frequency and constant R, L and C.
- b) A series circuit comprising R, L and C is supplied at 220V, 50 HZ. At resonance, the voltage across the capacitor is 550V. The current at resonance is 1A. Determine the circuit parameters R, L and C.

OR

- 7) a) Derive the expressions for ac through series RC circuit.
- b) Calculate the resistance and inductance or capacitance in series for each of the following impedances assumes the frequency to be 60 Hz.
- i) $12+j30$ ohms, ii) $-j60$ ohms iii) $20 \angle 60^\circ$ ohms..

UNIT - IV

- 8) a) Derive the expression for transient response of RLC Series circuit with unit step input.
- b) In a series RLC circuit, $R=5\text{ohms}$, $L=1\text{H}$ and $C=1\text{F}$. A DC voltage of 20V is applied at $t=0$, obtain $i(t)$.

OR

- 9) Write a PSPICE program to find Thevenin's circuit for circuit shown in figure.

