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

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

ELECTRICAL CIRCUITS-II
(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

- 1 Derive the relationship between Phase and Line voltages, currents in delta connected load. **12M**

OR

- 2 A 400V, 3 ϕ supply feeds an unbalanced 3 wire star connected load. The branch impedances of the load are $Z_R = (4+j8)\Omega$, $Z_Y = (3+j4)\Omega$, $Z_B = (5+j20)\Omega$. Find the line currents and voltages across phase impedance. Assume RYB phase sequence. **12M**

UNIT-II

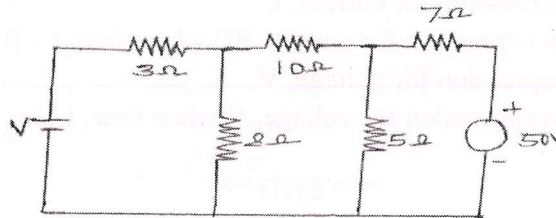
- 3 Derive the transient response of an RC circuit with AC excitation. **12M**

OR

- 4 A series RL circuit with $R=30\Omega$ and $L=15H$ has a constant voltage $V=60\text{Volts}$ applied at $t=0$. Determine the current $i(t)$, the voltage across the resistor and voltage across the inductor. **12M**

UNIT-III

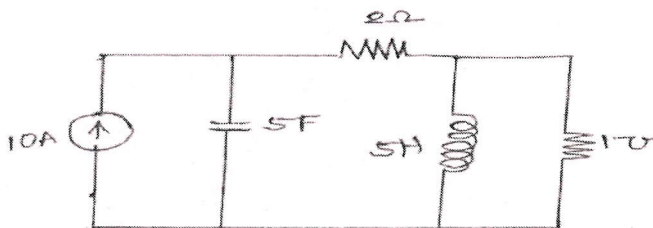
- 5 Find voltage V for the circuit shown in fig which makes the current in the 10Ω resistor is zero by using nodal analysis. **12M**



OR

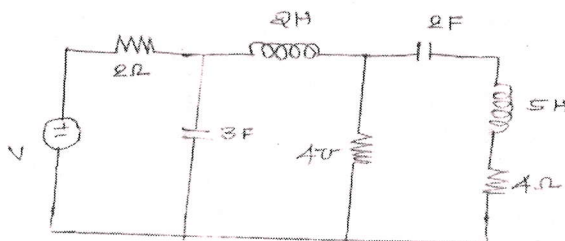
- 6 Write the procedure to draw the dual network and find dual network for the following. **6M**

a



6M

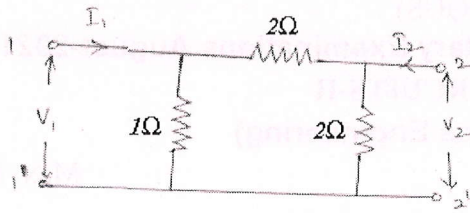
b



6M

UNIT-IV

- 7 Derive the expressions for Z-parameters in terms of ABCD parameters. 12M
- OR**
- 8 Find the Y - parameters for the network shown in figure. 12M

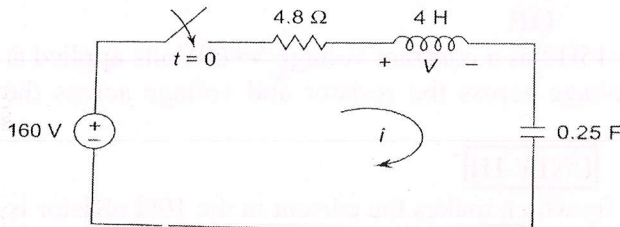


UNIT-V

- 9 a A 500Ω resistor, a 16mH inductor, and a 25 nF capacitor are connected in parallel which is placed in series with a 2000Ω resistor. Express the impedance of this combination as a rational function of s . 6M
- b Using the initial value theorem, find the initial value of the signal corresponding to $Y(s) = \frac{s+1}{s(s+2)}$ 6M

OR

- 10 The energy stored in the circuit shown is zero at the time when the switch is closed.



- a Find the s - domain expression for current, I . 3M
- b Find the time domain expression for current, $i(t)$ when time, $t > 0$. 3M
- c Find the s - domain expression for voltage, V . 3M
- d Find the time domain expression for voltage, V when time, $t > 0$. 3M

*** END ***