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

**B.Tech II Year I Semester Supplementary Examinations Feb-2021**

**ELECTRICAL CIRCUITS-II**

**(Electrical and Electronics Engineering)**

Time: 3 hours

Max. Marks: 60

**PART-A**

(Answer all the Questions 5 x 2 = 10 Marks)

- |   |  |    |
|---|--|----|
| 1 | a Write the voltage and current relationship in star connected system. | 2M |
|   | b Define transient state.  | 2M |
|   | c Define planar and non-planar graph.                                  | 2M |
|   | d Write the generalized equations for Z-Parameters.                    | 2M |
|   | e Define Laplace transform of any function.                            | 2M |

**PART-B**

(Answer all Five Units 5 x 10 = 50 Marks)

**UNIT-I**

- |   |   |    |
|---|---|----|
| 2 | a Explain two-watt meter method for power measurement in three phase circuits.            | 5M |
|   | b Explain reactive power measurement in balanced three-phase load using single wattmeter. | 5M |

**OR**

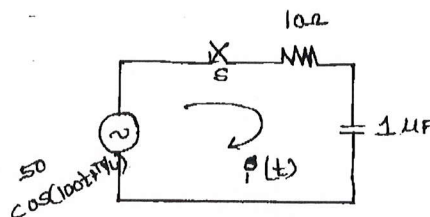
- |   |  |     |
|---|--|-----|
| 3 | A three-phase balance delta connected load of $(4+j8) \Omega$ is connected across a 400V, 3- $\phi$ balanced supply. Determine the phase currents and line currents. And power drawn by the load. Assume RYB phase sequence. | 10M |
|---|--|-----|

**UNIT-II**

- |   |  |    |
|---|--|----|
| 4 | a A series RL circuit with $R=30\Omega$ and $L=15H$ has a constant voltage $V=60V$ applied at $t=0$ . Determine the current $I$ , the voltage across the resistor and across the inductor. | 5M |
|   | b Derive the transient response of an RL circuit with dc excitation.   | 5M |

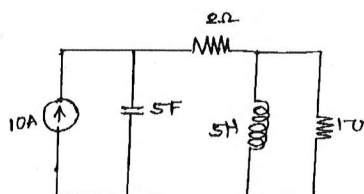
**OR**

- |   |  |     |
|---|--|-----|
| 5 | In the circuit shown in fig. Determine the complete solution for the current when switch is closed at $t=0$ , applied voltage is $V(t)=50\cos(100t+\pi/4)$ , resistance $R=10 \Omega$ and capacitance $c=1\mu F$ . | 10M |
|---|--|-----|

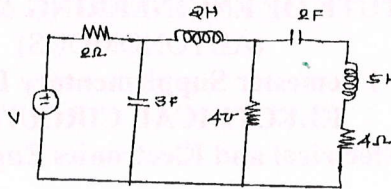


**UNIT-III**

- |   |   |    |
|---|---|----|
| 6 | a Write the procedure to draw the dual network and find dual network for the given circuit. | 5M |
|---|---|----|

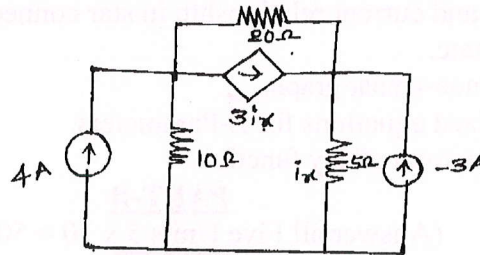


- b Write the procedure to draw the dual network and find dual network for the given circuit. 5M



OR

- 7 Determine  $i_x$  for the following network using network topology. 10M



**UNIT-IV**

- 8 Derive the expressions for Z-parameters in terms of ABCD parameters. 10M

OR

- 9 Derive the expressions for Y-parameters in terms of ABCD parameters? 10M

**UNIT-V**

- 10 a Explain Laplace transform of a function. 5M  
 b Derive Laplace transform of all standard signals 5M

OR

- 11 A  $500\Omega$  resistor, a  $16\text{mH}$  inductor, and a  $25\text{ nF}$  capacitor are connected in parallel which is placed in series with a  $2000\Omega$  resistor. Express the impedance of this series combination as a rational function of  $s$ . 10M

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