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Reg. No: ☐☐☐☐☐☐☐☐☐☐

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Supplementary Examinations August-2021
NETWORK ANALYSIS & SYNTHESIS
(Electrical and Electronics Engineering)

Time: 3 hours　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 60

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

UNIT-I

1　**a**　Derive the relationship of voltage and current in star connected load.　　**6M**

　　b　A three phase balance delta connected load of (4+j8) Ω is connected across a 400V,3¢ balanced supply. Determine the phase currents and line currents. And also power drawn by the load. Assume RYB phase sequence.　　**6M**

OR

2　**a**　Three impedances $Z1=20 \llcorner^{30}$, $Z2=40 \llcorner^{60}$, $Z3=10 \llcorner^{-90}$ are delta connected to a 400V,3¢ System. Determine i) phase currents ii) line currents iii) total power consumed by the load.　　**6M**

　　b　An unbalanced 4 wire star connected load has a balanced voltage of 400V. The load are $Z_1=(4+j8)$ Ω ,$Z_2=(5+j4)$Ω ,$Z_3=(15+j20)$Ω .Calculate line currents , current in neutral wire, total power.　　**6M**
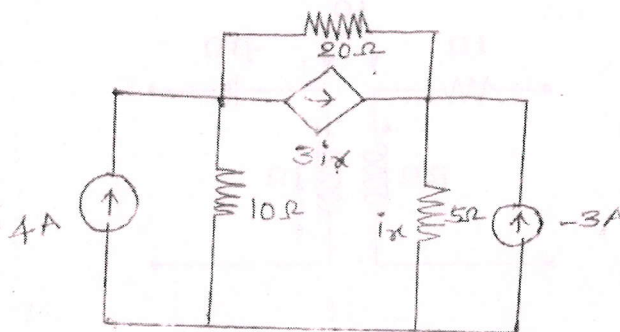
UNIT-II

3　**a**　Derive the transient response of an RC circuit with DC excitation.　　**8M**

　　b　A series RL circuit with R=30Ω 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.　　**4M**

OR

4　**a**　Derive the transient response of an RLC circuit with sinusoidal excitation.　　**10M**

　　b　Define time constant　　**2M**

UNIT-III

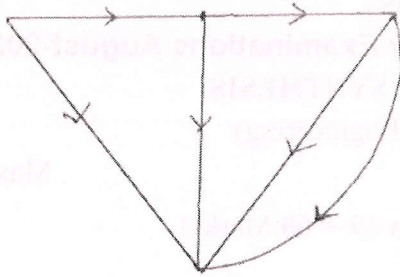**5**　**a**　Define tree, co-tree and planar graphs　　**4M**

　　b　Determine i_x for the following network using network topology.　　**8M**

OR

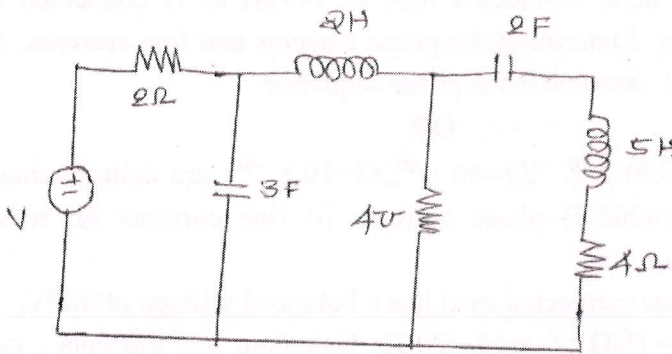6   a Find the tie-set for the following oriented graph: 5M

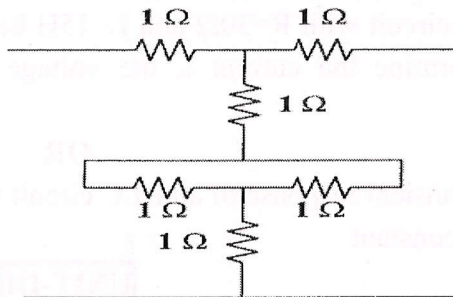b Draw the dual network: 7M

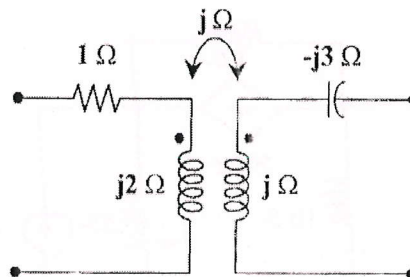## UNIT-IV

7   a Determine the Z parameters of the following two port network.   10M

b Mention the condition for symmetry and reciprocity in y-parameters: 2M

OR

8   a Obtain the T parameters of the following two port network   8M

b Derive the expressions for h-parameters of a two port network?   4M

UNIT-V

9 a Explain about different types of filters.   6M

   b Design a π-type attenuator to give 10 dB attenuation and to have a characteristic   6M
      impedance of 200 Ohms.

OR

10 a Design a high pass filter having cut of frequency of 1KHz with load resistance of   6M
       600ohms.

    b Explain about constant K low pass filter.   6M

*** END ***