

**II B.Tech II Semester Supplementary Examinations, April/May 2005**  
**ELECTRICAL CIRCUITS-II**  
**(Electrical & Electronic Engineering)**

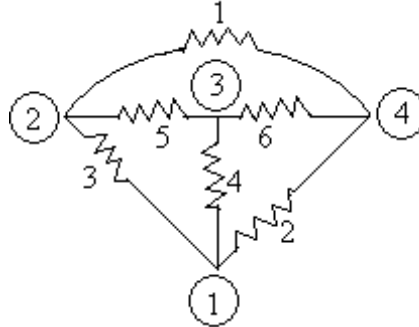
Time: 3 hours

Max Marks: 70

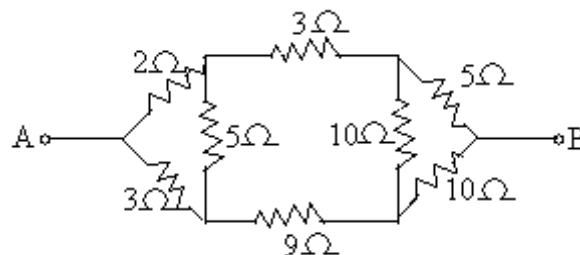
Answer any FIVE Questions  
 All Questions carry equal marks

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1. (a) Derive the relationship between line voltage and phase voltage of  $\Upsilon$  connected system with the help of phasor diagram.
- (b) An unbalanced four wire, star connected load has a balanced voltage of 400V, the loads are  $Z_1 = (4 + j8) \Omega$ ;  $Z_2 = (3 + j4) \Omega$ ;  $Z_3 = (15 + j20) \Omega$ . Calculate the
  - i. line currents
  - ii. current in the neutral wire and
  - iii. the total power.
2. (a) Explain the term duality with suitable examples.
- (b) For the given network in the figure below, draw the graph and choose a possible tree. Construct the basic tieset schedule.

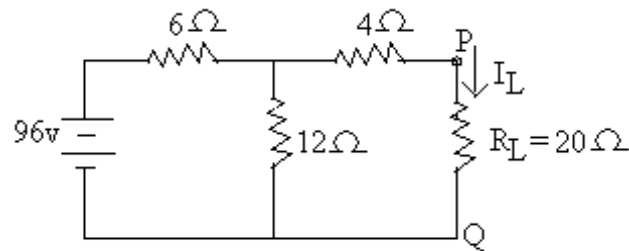


3. (a) Find the equivalent resistance between the terminals A and B of network shown in the figure below.

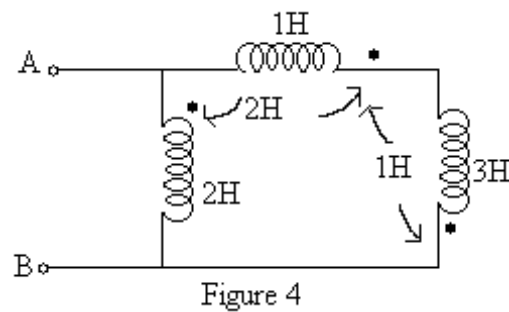


- (b) State and explain reciprocity theorem.

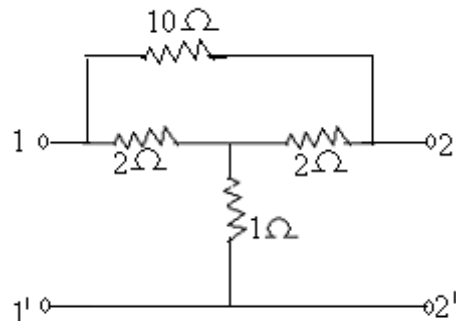
4. (a) State and explain Max. power transfer theorem.  
 (b) Calculate the current flowing through  $R_L = 20\Omega$ , of the network shown in the figure below by using thevenin's theorem.



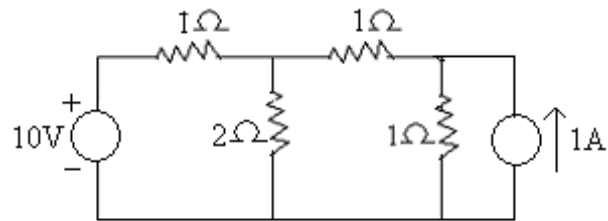
5. (a) Define:  
 i. self inductance and  
 ii. mutual inductance.  
 (b) Calculate the effective inductance of the circuit shown in the figure below.



6. Obtain the short circuit admittance parameters of the network shown in the figure below and there by obtain the A,B,C,D, parameters.



7. (a) State and explain millman's theorem.  
 (b) Calculate the current in the  $2\Omega$  resistor using superposition theorem shown in figure below.



8. (a) Deduce the relation between Y and Z parameters.  
(b) Explain how do you measure power in a 3 -  $\phi$  balanced network using 2 wattmeters?

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