B.E. Third Semester (Electrical & Electronics) (New)

Network Analysis : 3 EX 02

P. Pages : 4 | AU - 2526

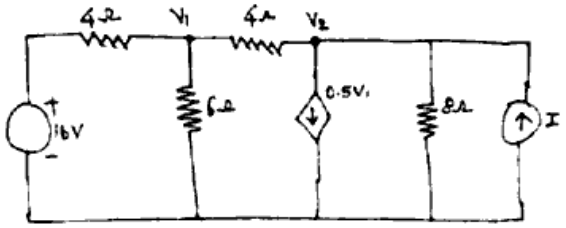
Time : Three Hours | Max. Marks : 80

* 0 7 2 6 *

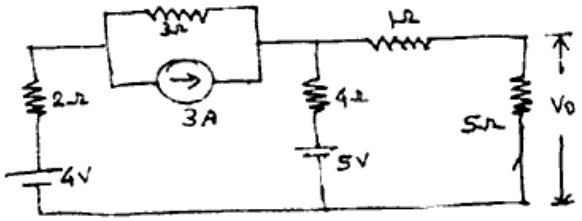
Notes : 1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) Using nodal analysis, find the value of current I to reduce the node voltage V_2 to zero. **7**



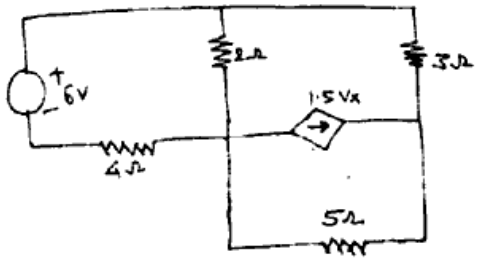
b) For the circuit shown in figure below, find V_o & $I_{3\Omega}$. **6**



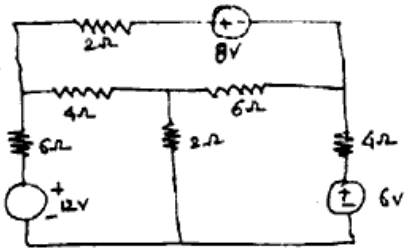
OR

2. a) Explain Dependent sources & Independent sources. **6**

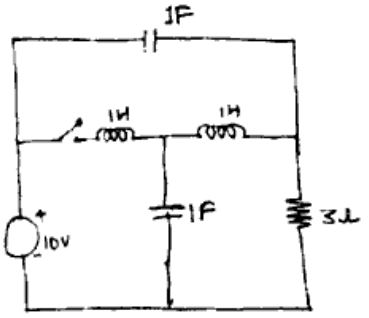
b) Calculate output of current source. **7**



3. a) A network has been shown in figure below. Write down the tieset matrix & obtain network equilibrium equation in matrix form using KVL. **7**

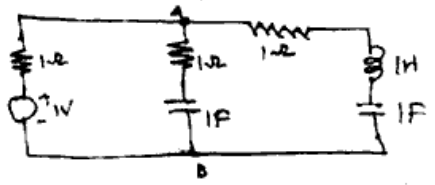


b) For the network shown below find the dual network. **6**



OR

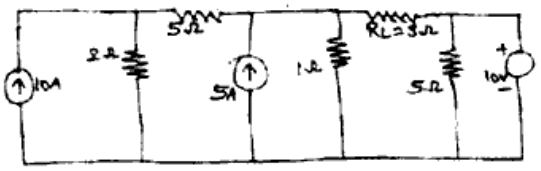
4. a) For the network shown below, draw the oriented graph. Define any one tree & mention its twigs & links. Obtain incidence matrix. **7**



b) Obtain the full incidence matrix from the reduced incidence matrix gives below & form the oriented graph. **6**

$$A = \begin{bmatrix} 0 & -1 & 0 & -1 & 1 & 0 \\ 0 & 0 & -1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 0 & -1 & -1 \end{bmatrix}$$

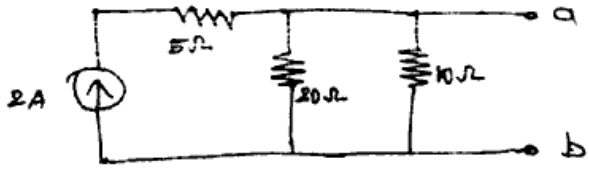
5. a) For the circuit shown in figure, find the power loss in R_L using Thevenin's theorem. **7**



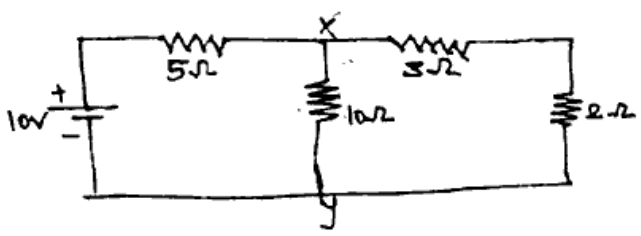
b) State and explain Milliman's theorem in detail. Enumerate its limitations. **7**

OR

6. a) Find the voltage across the terminals 'a - b' & verify reciprocity theorem for the circuit. **7**

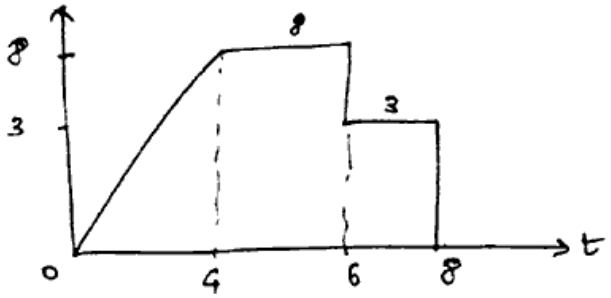


b) Find 'V_{xy}' & 'I_{xy}' for circuit shown below, & substitute the branch faithfully. **7**

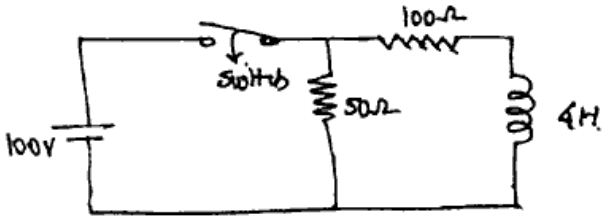


SECTION - B

7. a) Find the Laplace transform of the given figure. 7



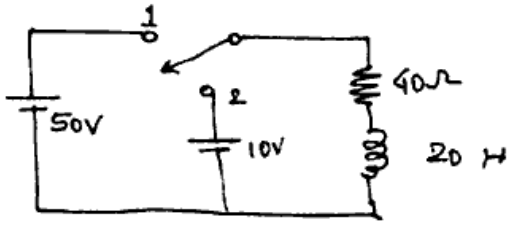
b) If the circuit initial current 'I' is zero, find the source current after closing of switch 'S' : 7



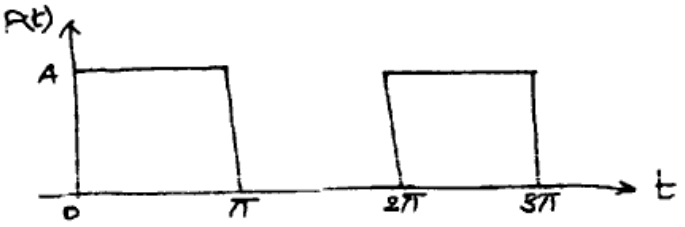
OR

8. a) Derive an expression for DC response of an R - C circuit. 7

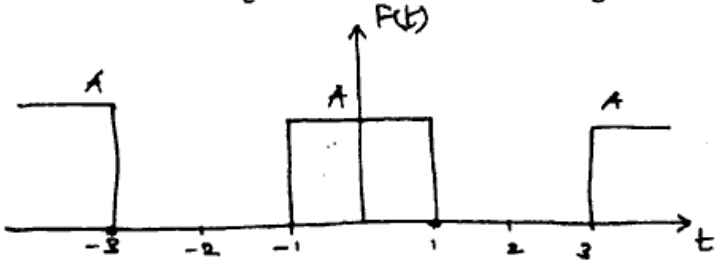
b) The switch in figure shown below has been in position 1 for a long time, it is moved to position 2 at t = 0, obtain the expression for current for t > 0 . 7



9. a) Find the Fourier Series of waveform, draw the magnitude spectrum. 6



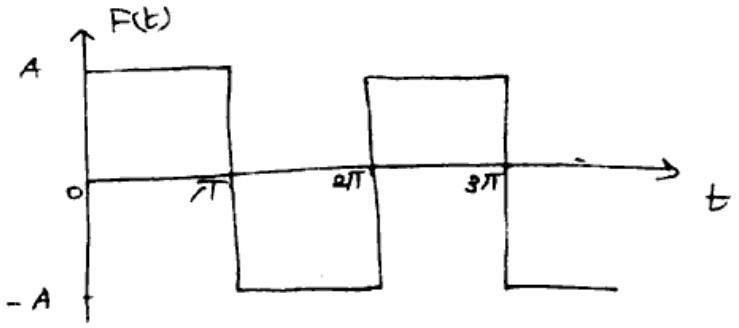
b) Find the Fourier series of the rectangular waveform shown in figure below. 7



OR

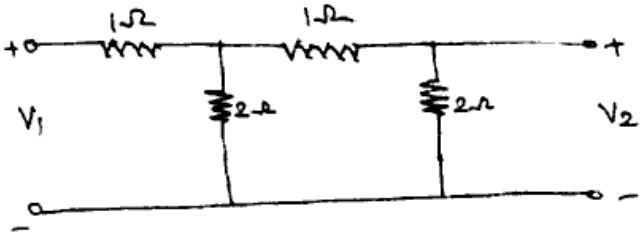
10. a) Determine Fourier coefficient's for Even Symmetry. 6

b) Find the exponential Fourier Series of waveform shown in figure below. Draw the magnitude spectrum. 7



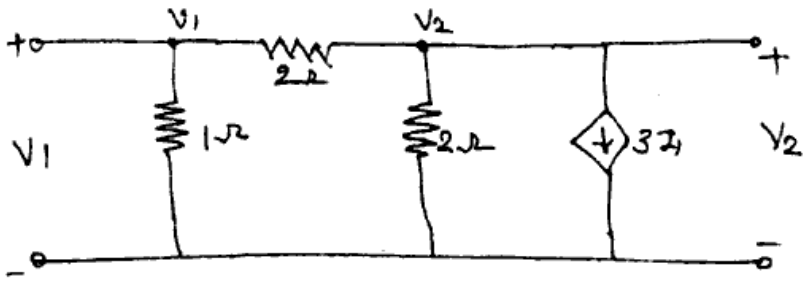
11. a) Derive an expression for condition of symmetry for y - parameter. 7

b) Find Z - parameter for the network shown below. 6

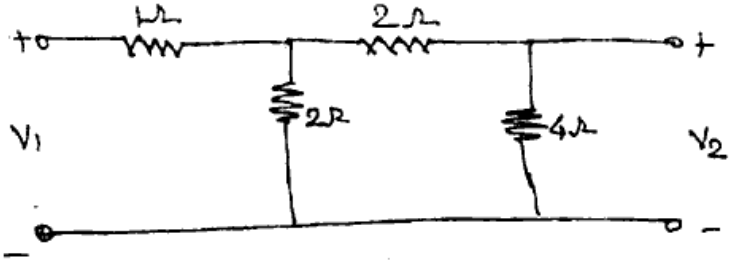


OR

12. a) Determine Y & Z parameter for the network shown in figure below. 7



b) Determine hybrid parameter for the network shown below. 6



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