Code No: A10401

MLR INSTITUTE OF TECHNOLOGY

(An Autonomous Institution)
I B.Tech I Sem Supplementary Examinations- December-2016
NETWORK ANALYSIS
(ECE)

Time: 3 hours   Max.Marks :75

Note: 1. This question paper contains two parts A and B.
     2. Part A is compulsory which carries 25 marks. Answer all Questions in part A.
     3. Part B consists of 5 units. Answer any one full question from each unit. Each question carries 10
        Marks and may have a,b,c as sub questions.

|	**PART-A**	**[25M]**

1. a) State and Explain Ohms Law.   [2M]
    b) Source transformation technique.   [2M]
    c) Define RMS Value.   [2M]
    d) State Millman's Theorem.   [2M]
    e) Define (i) node (ii) path.   [2M]

2. a) Explain about Network Elements.   [3M]
    b) Explain Current division and Voltage division rules.   [3M]
    c) A Parallel R-C circuit has a resistance of 50 ohm in Series with a capacitance of
      $100\mu F$ and is connected across 230 V, 50Hz supply. Calculate circuit current.   [3M]
    d) State and explain Tellegen's Theorem.   [3M]
    e) Write the expressions of ABCD parameters in terms of z parameters.   [3M]

	PART-B	**[50M]**

3. a) State and explain Kirchoff's laws using neat diagrams.   [5M]
    b) Explain in detail ideal and practical voltage sources.   [5M]

(OR)

4. a) Explain the volt-ampere relationship of R, L and C elements.   [6M]
    b) classify and discuss about dependent sources.   [4M]

5. Determine the current in the 5Ω resistor for the circuit shown in below figure.   [10M]
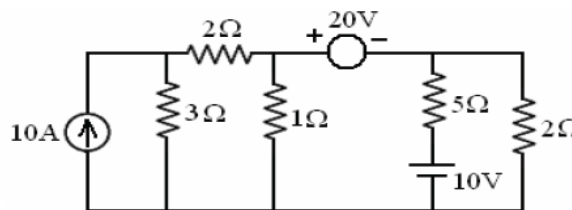
(OR)

6. a) Explain Star-Delta and Delta-Star Transformation with Example.   [6M]
    b) Determine the current delivered by the source in the circuit shown in figure below. [4M]
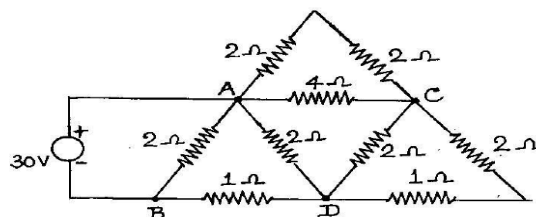

7. a) Derive the expression for RMS value of sinusoidal current wave form given by the
     equation $V=V_m\sin\theta$.   [5M]
    b) Determine the average and effective values of saw-tooth waveform as shown in below
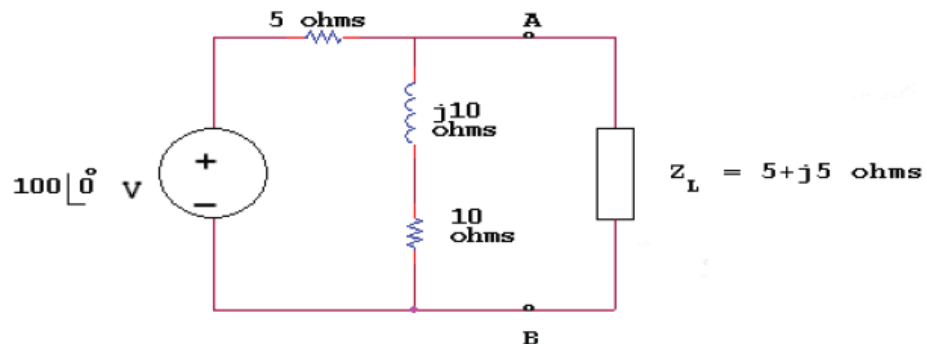   figure.   [5M]
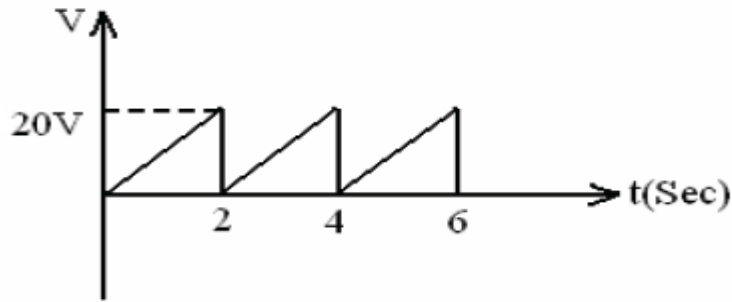
(OR)

8. a) Explain the concept of power factor. [4M]
    b) A series RLC circuit R=8 ohm, L=3.5 Henry, C=800 μF. If the supply voltage is 220V
       and frequency is 60 Hz, Find (i) Drop across each circuit element, (ii) Total resistive,
       Inductive and capacitive drops, (iii) Real Power (iv) Power Factor of the circuit. [6M]

9. Use Thevenin's theorem to find the current through the 5-Ω resistor in below figure. [10M]
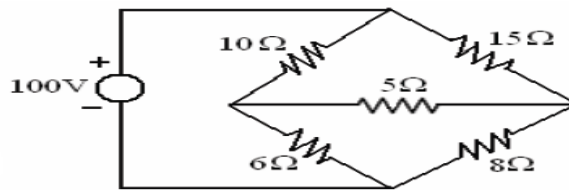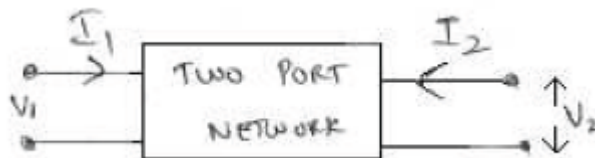

(OR)

10. Using Norton's theorem, find the current through the load impedance Z_L, for the network as
    shown in below figure. [10M]

11. For the two port n/w shown in the below figure, the currents $I1$ and $I2$ entering at port 1 and
    2 respectively are given by the equations. [10M]

$$I_1 = 0.5 V_1 - 0.2 V_2$$
$$I_2 = - 0.2V_1 + V_2.$$

    Where V_1 and V_2 are the port voltages at port 1 and 2 respectively. Find the Y and ABCD
    parameters for the network.

(OR)

12. Define and explain the following terms. [10M]
    i) Loop and branch ii) Graph iii) Tree of a graph and Sub graph iv) Cutset and Basic cutset
    v) Tieset and Basic tieset.

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