Code No: 19ECT304

R19

II B.Tech I Semester Regular Examinations, March-2021

Networks and Transmission Lines

(Electronics and Communication Engineering)

Time: 3 Hours **Max. Marks: 60**

Note : Answer **ONE** question from each unit **(5 ×12 = 60 Marks)**

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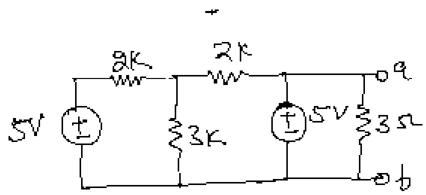
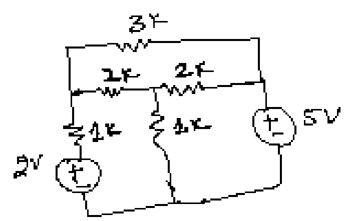
UNIT-I

1. a) Find the Thevenin's equivalent circuit for the following circuit across the terminal a and b [6M]

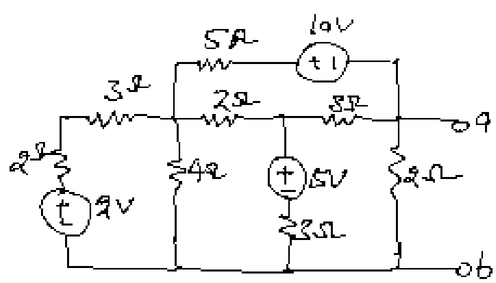


b) Find the current through each resistance of circuit shown below using nodal analysis. [6M]

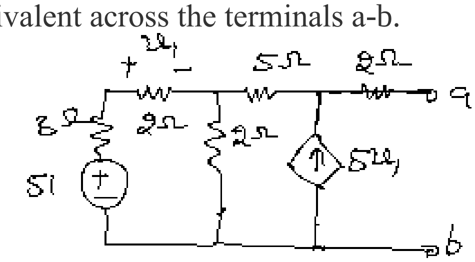


(OR)

2. a) Find the maximum power transferred by the source to the load of 5Ω load resistance. [6M]



b) Find the Norton's equivalent across the terminals a-b. [6M]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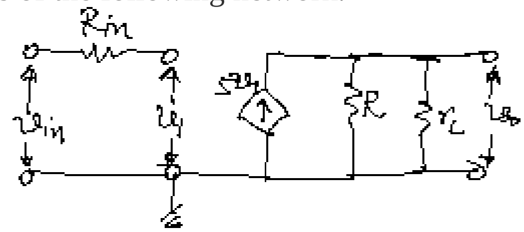
UNIT-II

3. a) Find the *h*-parameters of the following network. [6M]



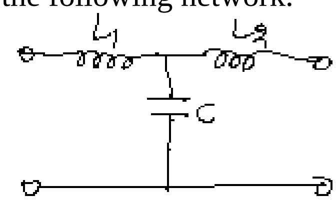
b) Two 2-port networks are connected in series and being represented by the [Z] and [Z] parameters as follows. [6M]

$$[Z] = \begin{bmatrix} 2 & 5 \\ 3 & 2 \end{bmatrix} [Z] = \begin{bmatrix} 3 & 2 \\ 2 & 5 \end{bmatrix}$$

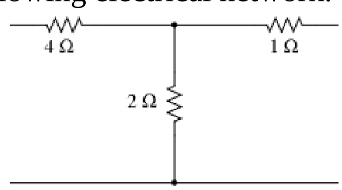
Find the h-parameters of the combined network.

(OR)

4. a) Find The [Z] parameters of the following network. [8M]

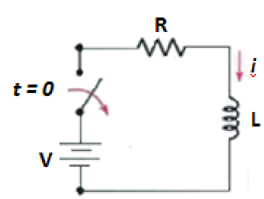


b) Find Z parameters of the following electrical network. [4M]

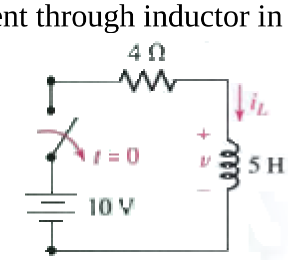


UNIT-III

5. a) Find the transient response of current in a series RL circuits for a DC excitation of V volts applied at t = 0. Assume inductor has zero initial energy. [8M]

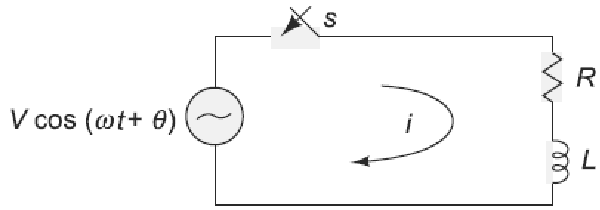


b) Write the expression of current through inductor in the following circuits. [4M]



(OR)

6. a) Determine the complete solution for current ‘i' in following circuit. [6M]



b) The winding of an electromagnet has an inductance of 5 H and a resistance of 20 Ohms. When it is connected to a 220 V, DC. supply, calculate: [6M]
(a) the steady state value of current flowing in the winding,
(b) the time constant of the circuit,
(c) the value of the induced e m f. after 0.2 s,
(d) the time for the current to rise to 90% of its final value, and(e) the value of the current after 0.5 s

UNIT-IV

7. Starting from the electrical equivalent circuit, derive the voltage and current expressions at any point on transmission line. Write the same for infinite transmission line. [12M]

(OR)

8. a) What is the difference between the distortions less and loss less transmission? Please give example of each type transmission line. [8M]

b) Explain the requirements for distortion less transmission on transmission lines [4M]

UNIT-V

9. a) Derive the expression for input impedance of a transmission line of length l and characteristic impedanceZ_o. [6M]

b) Find the input impedance of a short circuited and open circuited transmission line. Also draw the it’s behavior in respect to the time scale. [6M]

(OR)

10. a) What do you mean by the impedance matching? Explain the impedance matching using stub. [8M]

b) Find the reflection coefficient and standing wave ratio of a transmission line if it is terminated at the short circuit and open circuit load. [5M]

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