(10)

Name of the Program: B. Sc. in CEE
Semester: 3rd

Date: 06 October, 2023
Time: 2:30 pm – 4:00 pm

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)

ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Mid-Semester Examination
Course Number: EEE 4385
Course Title: Electrical and Electronic Technology

Summer Semester: 2022 – 2023
Full Marks: 75
Time: 90 Minutes

There are **05 (five)** questions. Answer **all 05 (five)** questions. The symbols have their usual meanings. Marks of each question and corresponding CO and PO are written in the brackets.

1. Define Ohm's law. Find I_0 in the circuit in Figure 1 by applying Ohm's law, Kirchhoff's voltage law (KVL) and Kirchhoff's current law (KCL). **(15) (CO1) (CO2) (PO2)**

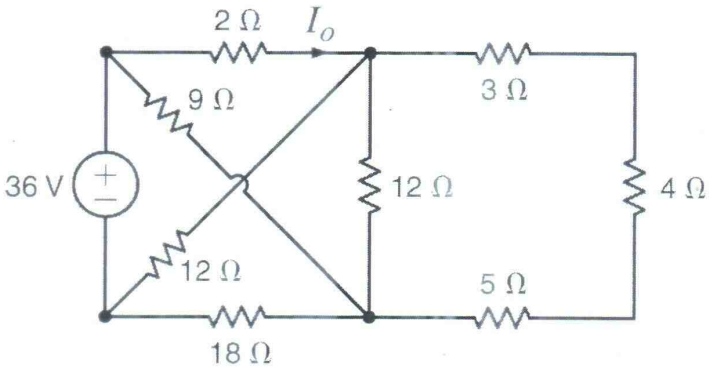

Figure 1

2. Define super nodes. Use nodal analysis to find V_0 in the circuit in Figure 2. **(15) (CO1) (CO2) (PO2)**

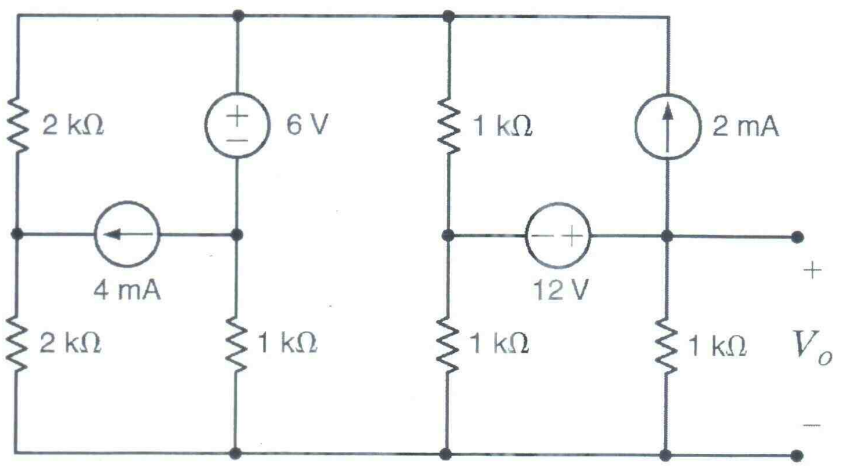

Figure 2

3. Using mesh analysis to evaluate the current I_0 in the circuit in Figure 3. **(15) (CO2) (PO2)**

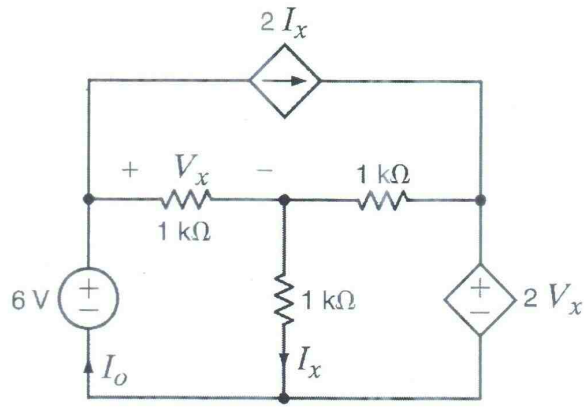

Figure 3

4. Define source transformation. Find V_0 in the network in Figure 4 using superposition principle. **(15) (CO1) (CO2) (PO2)**

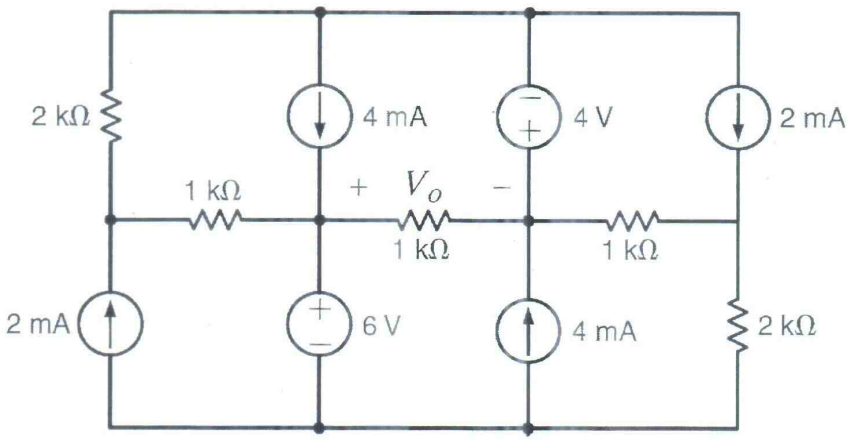

Figure 4

5. Define Norton's theorem. Find the value of R_L in Figure 5 for maximum power transfer. In addition, calculate the power dissipated in R_L under these conditions. **(15) (CO1) (CO2) (PO2)**

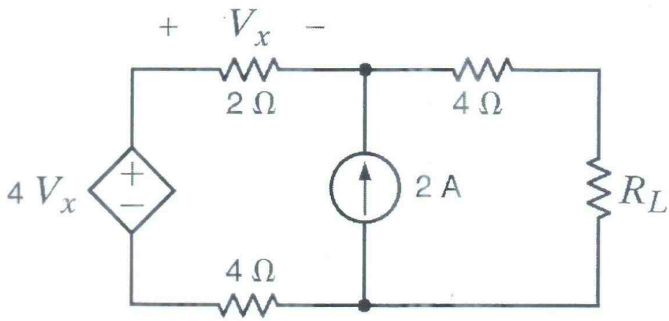

Figure 5