

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA, NIGER STATE
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION
DEPARTMENT OF INDUSTRIAL AND TECHNOLOGY EDUCATION
FIRST SEMESTER 2019/2020 ACADEMIC SESSION EXAMINATION

Course Title: Circuit Theory **Course Code:** ITE 353, **Time:** 1 hour 30 mins

INSTRUCTION: Answer 3 Questions Only

1a. State Kirchoff's current and voltage Laws

1b. Using Kirchoff's laws, determine the values of unknown current in figure 1a and emf in figure 1b

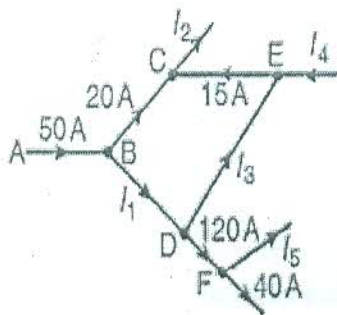


Figure 1a

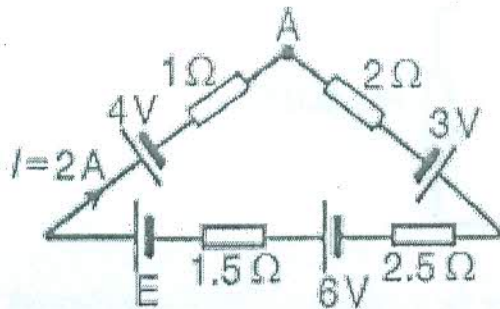


Figure 1b

2a. Explain the meaning of the following terms

(i). Node (ii). Mesh (iii) Bilateral Network (iv). Lumped Network (v) Distributed Network

2b. For the bridge network shown in Figure 2 determine the currents in each of the resistors

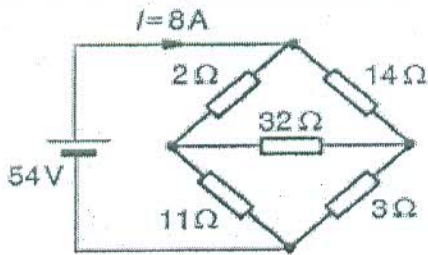


Figure 2

3a. State Superposition Theorem

3b. Determine the current in each branch of the network in figure 3 using the superposition theorem

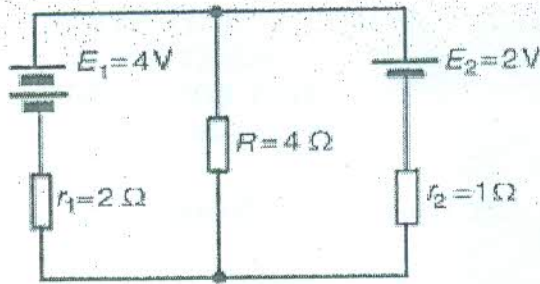


Figure 3

- 4a. State the procedures for using thevenin's theorem
- 4b. For the network shown in Figure 3 determine (a) the current in the 0.8Ω resistor using Thevenin's theorem (b) the power dissipated in 1Ω and 4Ω resistors

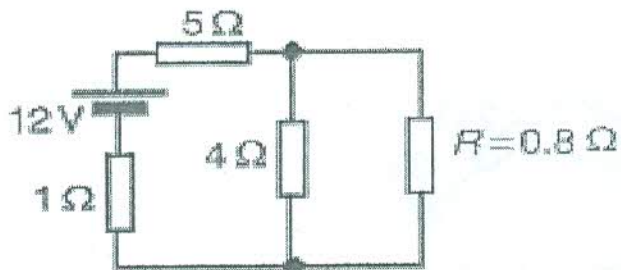


Figure 4

- 5A. (i). Explain the reason for the application of Star-Delta Network Transformation in resolving circuit network.
- 5A (ii) . With suitable circuit diagrams, explain how (Y) Wye network can be converted to Delta Network and vice versa
- 5B. Determine, for the bridge network shown in figure 5 (a) the value of the single equivalent resistance that replaces the network between terminals A and B, (b) the current supplied by the 52 V source, and (c) the current flowing in the 8Ω resistance.

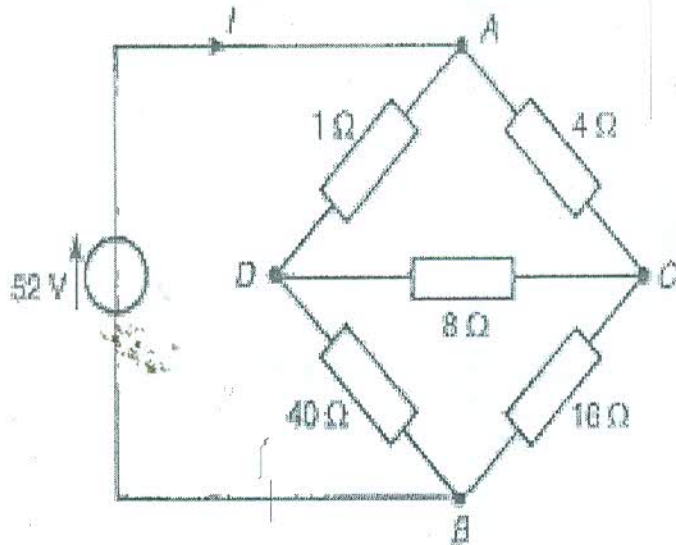


Figure 5