Daffodil International University
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Midterm Examination, Summer 2021 @ DIU Blended Learning
CenterCourse Code: CSE132 (Day), Course Title: Electrical Circuits
Level: 1   Term: 3   Section: C, R-1
Teacher: SMC Modality: Online Open Book Exam
Date: Monday, 12 July 2021   Time: 4:00-6:30pm
Two hrs and Thirty mins (2:30) to support online open/case study based assessment Marks: 25

Directions:
- **Students need to go through the CASE STUDY shown in this exam paper.**
- **Analyze and answer specific section based on your own thinking and work.**
- **Do not share as this will be treated as plagiarism by Blended Learning Center.**
- **The pdf file name must be CSE132_Your Section_Your ID.**

Answer all the following five questions

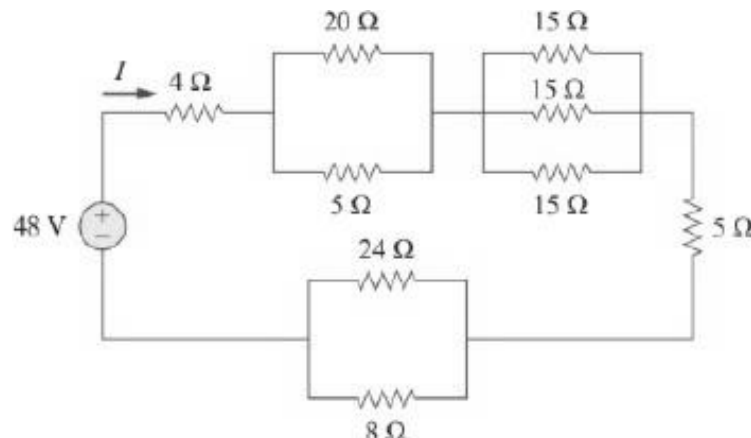**Q1.**   **5**
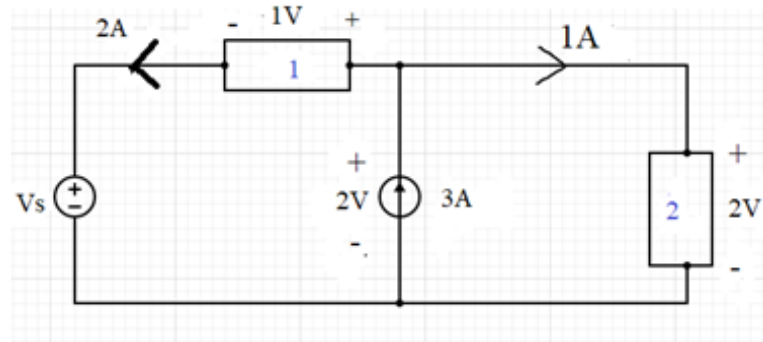
a) In the above circuit, determine the type (active or passive) of electrical elements.
b) Use Conservation of power to determine the power (absorbed or generated) by the voltage source V_S.

Q2. Find the total current, *I* of the following circuit. Also find the current through upper **15Ω**   **5**
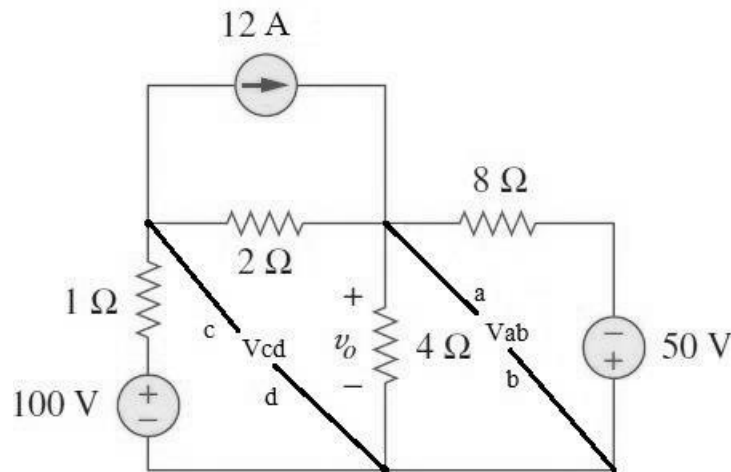resistance.

Q3. Using CDR, find the currents i_2 and i_4. Also find the Voltage $\mathbf{V_{ab}}$, using VDR. **5**
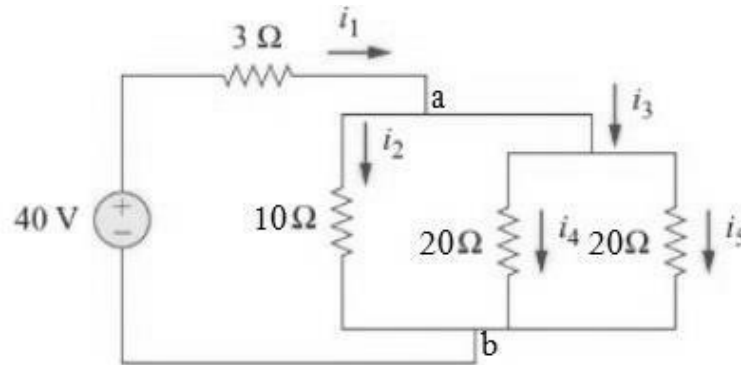
Q4. Using Nodal Analysis, find the node voltages and also the voltage v_o, Vab and Vcd. **5**

Q5. Suppose you are working as a provisional engineer of a robotics project. We have studied **5** electrical circuits and also few methods of circuit analysis. You have to design few circuits, so try to remember them. It will help you to get a job at that reputed robotics company.

In the robotic motherboard, there is a 3 loop electrical circuit, which has 3 voltage sources and 5 resistances. Among the voltage sources, 6V and 12V are placed in individual branches and 3V is placed in one of the common branch. At least one resistance is placed in the common branches of the loops. The values of the resistances will be 10Ω, 20Ω, 30Ω, 40Ω and 50Ω.

Draw the circuit diagram and find the loop currents using Mesh Analysis.