

Week of March. 7th

This week, I was studying for a skills assessment (CE major). So, I reviewed some topics such as Electronics, Basic Circuit Analysis, Algorithms, Data structures and etc..

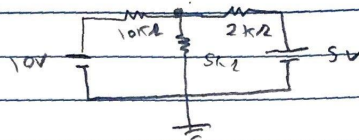
I decided and discussed with my team that I will be the captain of the team. I sent an email to Ron to make an appointment to ask him a question about the project.

Also, I was discussing with my team about technology that we will use for the windows operating system for the application that we will build.

I reviewed the Dart and Javascript programming languages.

My solutions for some questions that on skills assessment exam:

(Q1) Calculate the current passing through the $5k\Omega$ resistor in circuit shown below.



Nodal Analysis, at 'V'

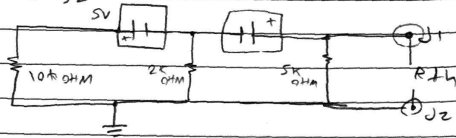
$$\Rightarrow \frac{V}{5} + \left(\frac{V-10}{10} \right) + \left(\frac{V-5}{2} \right) = 0$$

$$V = \frac{35}{8} \text{ V}$$

$$I_{5k\Omega} = \frac{V}{5k} = \frac{35}{8 \times 5k} \text{ A}$$

$$I_{5k\Omega} = 875 \mu\text{A}$$

② What is The Thevenin Resistance R_{th} of the circuit shown below between terminal 11 and 12



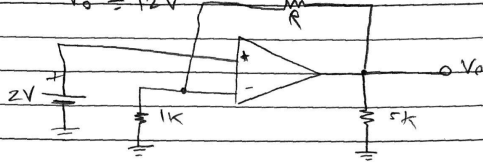
$$\frac{1}{R_{th}} = \left[\frac{1}{10k} + \frac{1}{5k} + \frac{1}{2k} \right]$$

$$\frac{1}{R_{th}} = \frac{8}{10k}$$

$$R_{th} = 1.25 k\Omega$$

Q3 Find the Value of the Resistance R in the circuit shown below if

$$V_o = 12V$$



$$I = \frac{2}{1k} = 2mA$$

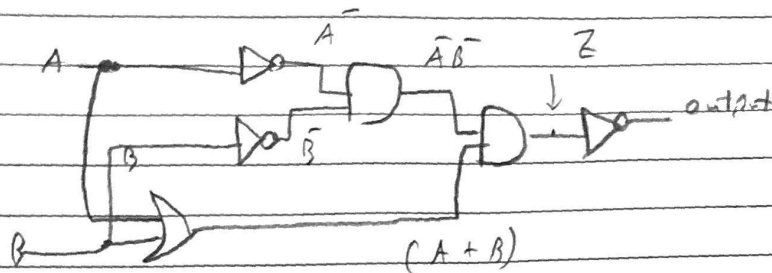
$$R = \frac{(V_o - 2)}{I} = \frac{(12 - 2)}{2} k\Omega$$

$$R = 5k\Omega$$

Q4) Simplify the following expression using Boolean algebra

$$\begin{aligned} & AB + B(A+C) + C(A+B) \\ &= AB + AB + BC + AC + BC \\ &= AB + AC + BC \end{aligned}$$

Q5) Find the output expression for the logic circuit



$$Z = (\bar{A}\bar{B}) \cdot (A+B) = 0$$

$$\text{output} = \bar{Z} = 1$$

$$\boxed{\text{output} = 1}$$