

الفترة الامتحانية: الأولى

اليوم والتاريخ: الأربعاء 29/05/2019

اسم المقرر: الدارات الكهربائية - 1

مدة الامتحان: ساعة ونصف

الدرجة: خمسون

عدد الأسئلة: 5

عدد الصفحات: 2

الفصل: الثاني

العام الدراسي: 2018-2019

اسم المدرس: د. م. حسان أحمد

Solve the following problems.

1. For the circuit in Fig. 1, find v_1 and v_2 using nodal analysis. [10 p.]

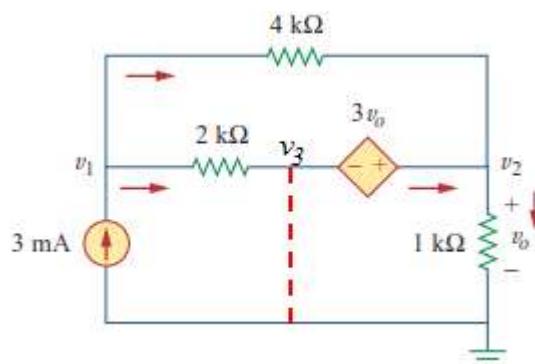


Fig. 1

2. Apply mesh analysis to find i in Fig. 2. [10 p.]

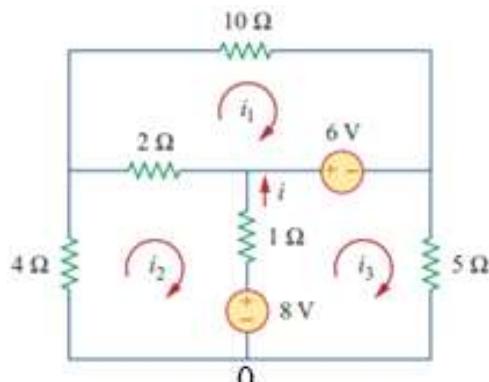


Fig. 2

3. Using the ideal op amp characteristics, obtain i_x and i_y in the op amp circuit in [10 p.] Fig. 3 for given

$$V = 0.5 \text{ V}, R_1 = 5 \text{ k}\Omega, R_2 = 8 \text{ k}\Omega, R_3 = 10 \text{ k}\Omega, R_4 = 2 \text{ k}\Omega$$

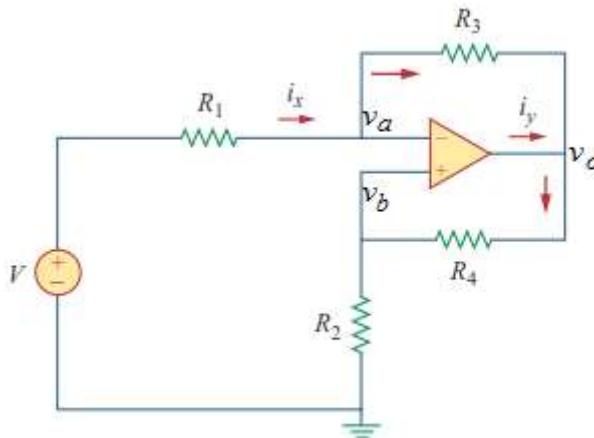


Fig. 3

4. For the circuit in Fig.4, calculate the value of R that will make the energy stored [10 p.] in the capacitor the same as that stored in the inductor under dc conditions.

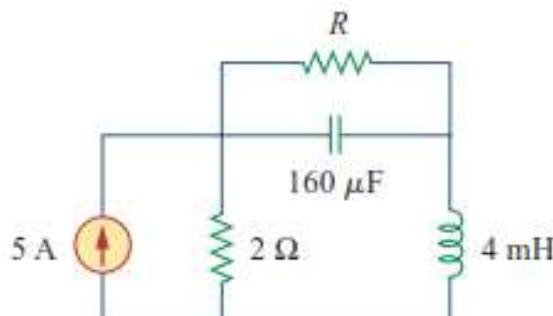


Fig. 4

5. For the first order RC circuit shown in Fig. 5. If we have [10 p.]

$$v(t) = 10e^{-4t} \text{ V} \quad \text{and} \quad i(t) = 0.2e^{-4t} \text{ A}, \quad t > 0 :$$

- a) Find the values of R and C .
- b) Calculate the time constant τ .
- c) Calculate the initial energy in the capacitor.
- d) Obtain the time it takes to dissipate 50 percent of the initial energy.

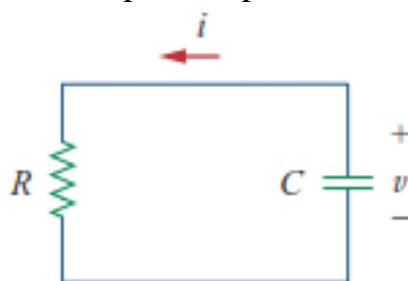


Fig.5

With best success

Dr. Eng. Hassan Ahmad