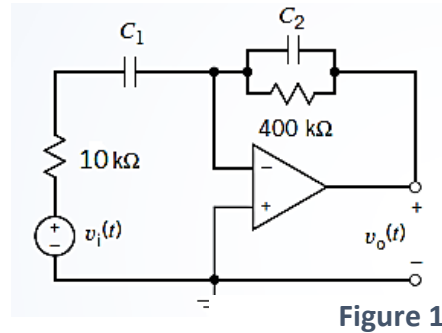


Circuits and Systems II, Fall 2020
Final Exam

Q1. (Marks 10)

In Figure 1 $v_i(t)$ is the input and $v_o(t)$ is the output of the circuit. The network function that represents this circuit is $H(\omega) = V_o(\omega)/V_i(\omega)$. The corresponding Bode plot is also shown.



If

$\omega_1 = \text{Roundup}(\text{Average of the first three digits of your Reg. No}) \times 10$.

$\omega_2 = (\text{Sum of the first three digits of your Reg. No}) \times 10$.

Determine the values of C_1 and C_2 .

Q2. (Marks 10)

Find $f(t)$,

When
$$F(S) = \frac{2s+8}{(s+1)(s^2+as+b)}$$

Where $a = \text{average of the first two digits of your Reg. No.}$

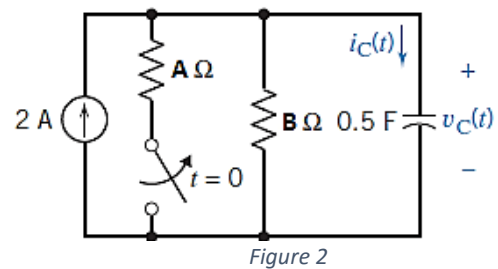
$b = \text{average of the 2}^{\text{nd}} \text{ and } 3^{\text{rd}} \text{ digit of your Reg. No.}$

Q3. (Marks 10)

Determine the voltage $v_C(t)$ and the current $i_C(t)$ for $t \geq 0$ for the circuit of Figure 2,

where $A = \text{Average of first two digits of Reg. No.}$

$B = \text{Average of the } 2^{\text{nd}} \text{ and } 3^{\text{rd}} \text{ digit of Reg. No.}$

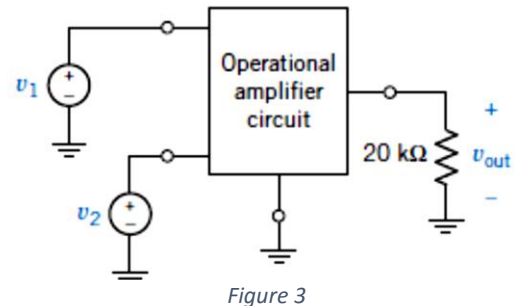


Q4. (Marks 10)

Design an Op-Amp circuit so that $v_{out} = Av_1 - Bv_2$

where $A = \text{Roundup}(\text{Average of first two digits of Reg. No})$

$B = \text{Roundup}(\text{Average of } 2^{\text{nd}} \text{ and } 3^{\text{rd}} \text{ digit of Reg. No}).$



Q5 (Marks 10)

Find the Thevenin equivalent circuit of the ac circuit in Figure shown in Figure 4.

where $R = (\text{Average of first three digits of Reg. No}) \times 10 \, \Omega$

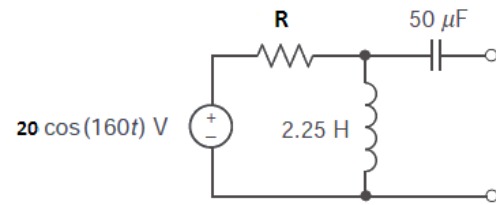


Figure 4

END