

Name:

Roll No:

Indian Institute of Information Technology, Sri City, Chittoor

Basic Electronic Circuits Class Test 3

Marks: 10

Duration: 1 Hour

Date: 15th April 2019

Instructions: Closed book exam, **no mobile Phones**, only calculators are allowed.

Q1. Determine the cut-off frequency of a filter circuit made of $R = 5.2 \text{ K}\Omega$, and $C = 12.5 \text{ nF}$? (2 Marks)

Q2. A band pass passive filter (Fig.1) is having the higher cut-off frequency is thrice of the lower cut-off frequency, and the ratio of resistances (R_1/R_2) is 0.25, determine C_1/C_2 . (2 Marks)

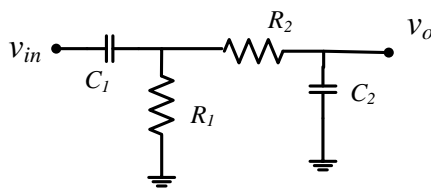


Fig. 1.

Q3. (i) Write the expression for v_o of the circuit shown in Fig. 2 in terms of v_{in} . (2 Marks)

(ii) if the cut-off frequencies are $f_L = 500 \text{ Hz}$ and $f_H = 1700 \text{ Hz}$, determine the values of R_1 and R_2 for $C_1 = 5C_2 = 50 \text{ nF}$. (2 Marks)

(iii) using (i) and (ii), determine v_o at the resonance frequency/center frequency, if the closed loop gain of the first stage (Op-Amp) is 2 and second stage (Op-Amp) is 3, and $v_{in} = 10 \text{ V}$. (2 Marks)

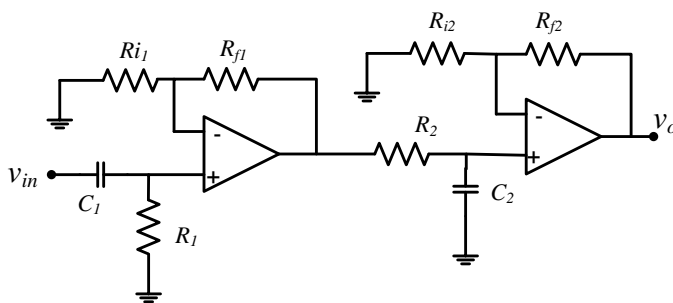


Fig. 2.

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Q1. Determine the cut-off frequency of a filter circuit made of $R = 5.2 \text{ K}\Omega$, and $C = 43 \text{ nF}$? (2 Marks)

Q2. A band pass passive filter (Fig.1) is having the higher cut-off frequency is twice of the lower cut-off frequency, and also the ratio of resistances (R_1/R_2) is 0.5, determine C_1/C_2 . (2 Marks)

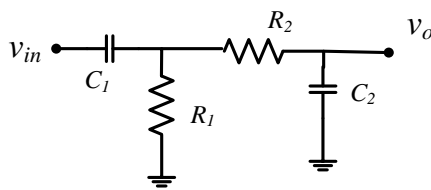


Fig. 1.

Q3. (i) Write the expression for v_o of the circuit shown in Fig. 2 in terms of v_{in} . (2 Marks)

(ii) if the cut-off frequencies are $f_L = 600 \text{ Hz}$ and $f_H = 1600 \text{ Hz}$, determine the values of R_1 and R_2 for $C_1 = 7.5C_2 = 25 \text{ nF}$. (2 Marks)

(iii) using (i) and (ii), determine v_o at the resonance frequency/center frequency, if the closed loop gain of the first stage (Op-Amp) is 2 and second stage (Op-Amp) is 3, and $v_{in} = 10 \text{ V}$. (2 Marks)

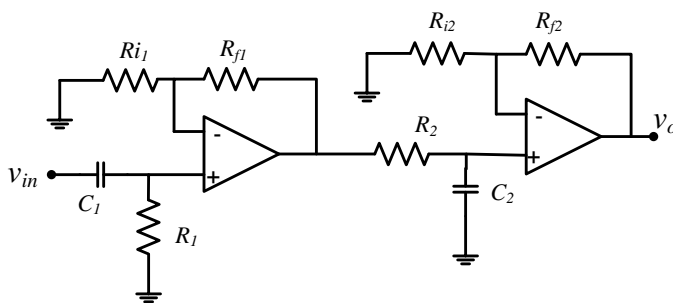


Fig. 2.

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