

**PUSAT PENGAJIAN DIPLOMA  
UNIVERSITI MALAYSIA PERLIS**

Tutorial 4

DKT214 – Electronic Circuits, Semester 1 2017/2018

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1. List down four categories of active filters and sketch the response curve of each categories.
2. Name the basic parts of an active filter.
3. Explain how Butterworth, Chebyshev and Bessel responses differ.
4. What determines the response characteristic of a filter?
5. Determine the critical frequency of the Sallen-Key low-pass filter in Figure 1, and set the value of  $R_1$  for an approximate Butterworth response.

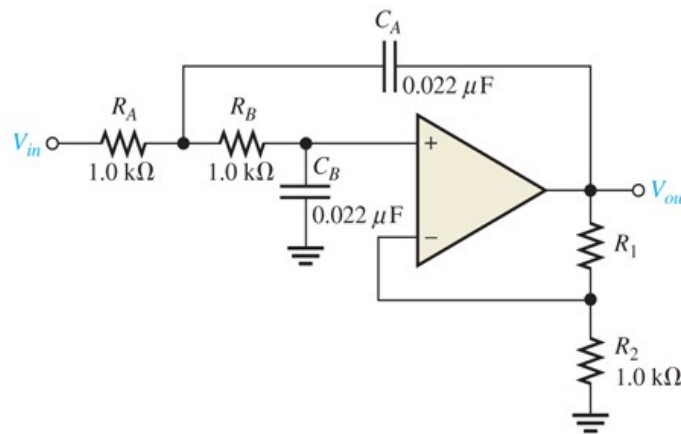


Figure 1

6. For the filter in Figure 2, determine the capacitance values for  $f_c = 1$  kHz if all the filter resistors are 680 Ohm. Assume equal value for capacitors. Also specify the values for the feedback resistors  $R_1$  and  $R_3$  to produce a Butterworth response, if the values of  $R_2 = R_4 = 680\Omega$ .

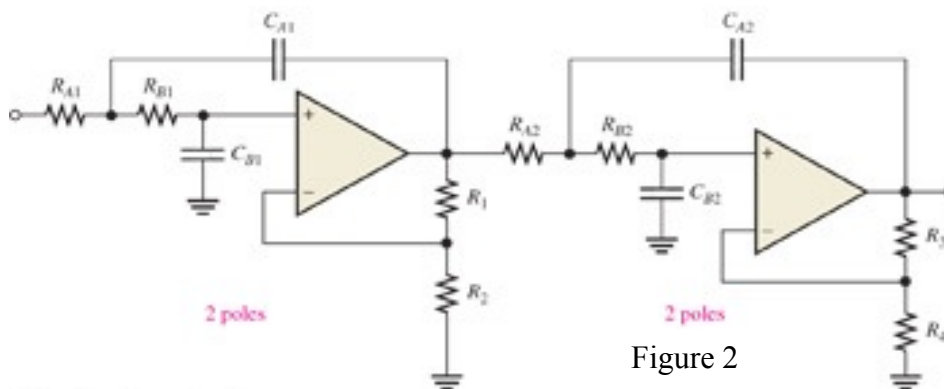


Figure 2

(b) Fourth-order configuration

7. Why is the damping factor of a filter important?
8. Determine the center frequency, Q and bandwidth for filter in Figure 3.

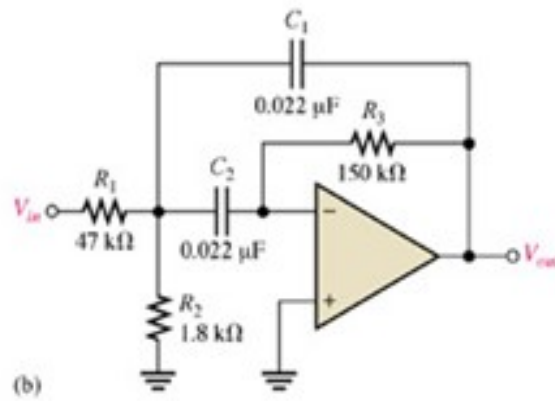


Figure 3