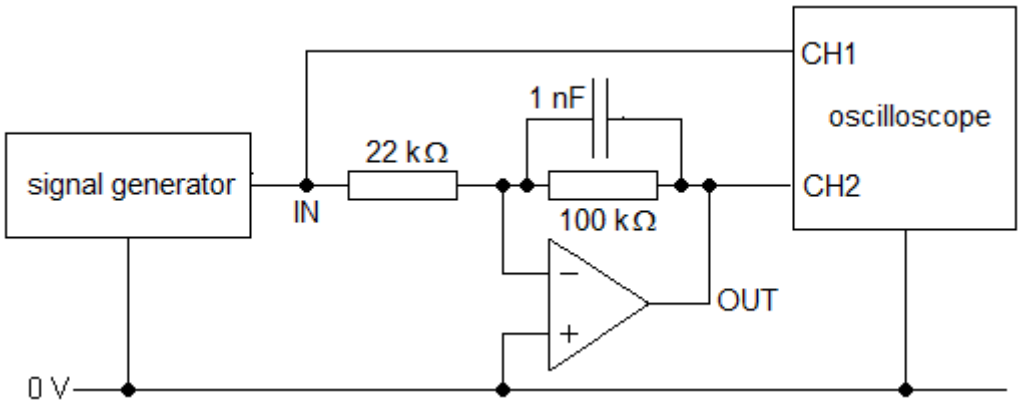
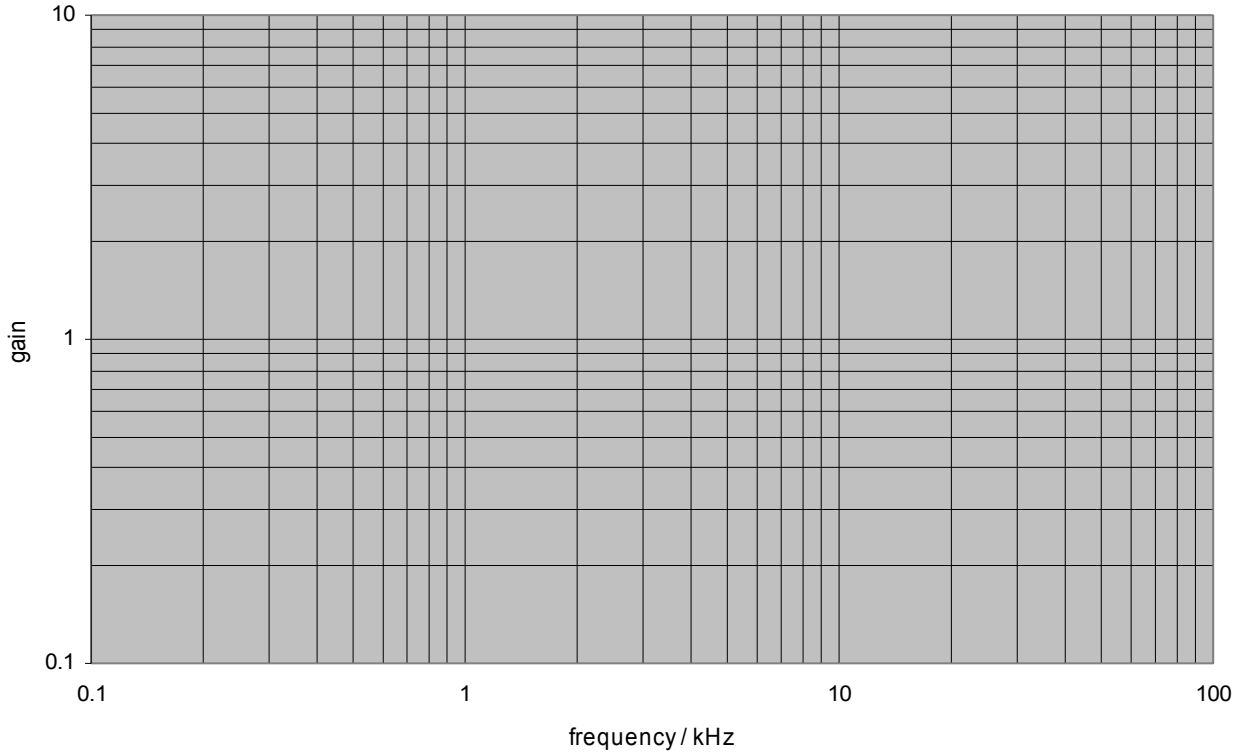
Treble cut filter

You are going to investigate the transfer characteristic of this active treble cut filter.



1 Do calculations to show that the break frequency and low frequency gain of the system are 1.6 kHz and 4.5 respectively. Use these values to draw on the axes below a gain-frequency graph for the system, using the two-straight lines approximation.

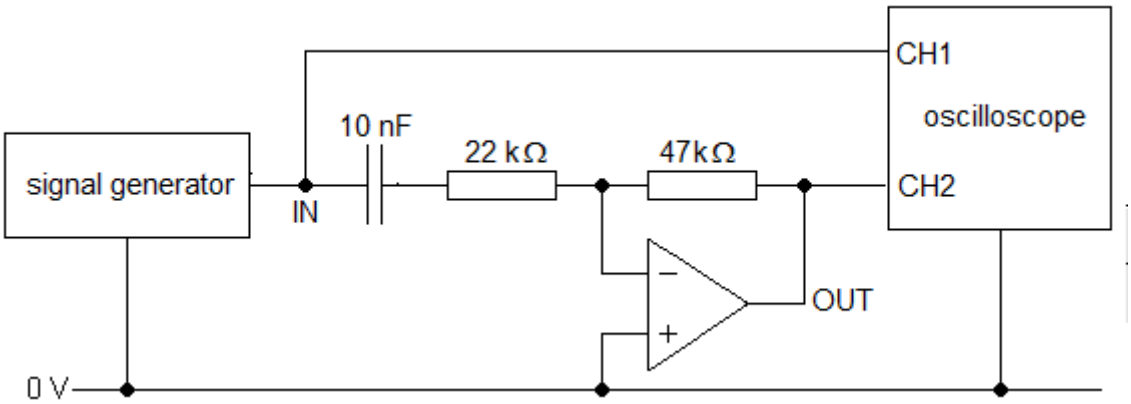


2 Adjust the signal generator so that the signal at IN is a sine waveform with a frequency of 100 Hz and an amplitude of 500 mV. Record the amplitude of the signal at OUT, and use it to calculate the gain of the system at 100 Hz. Plot the point on the graph.

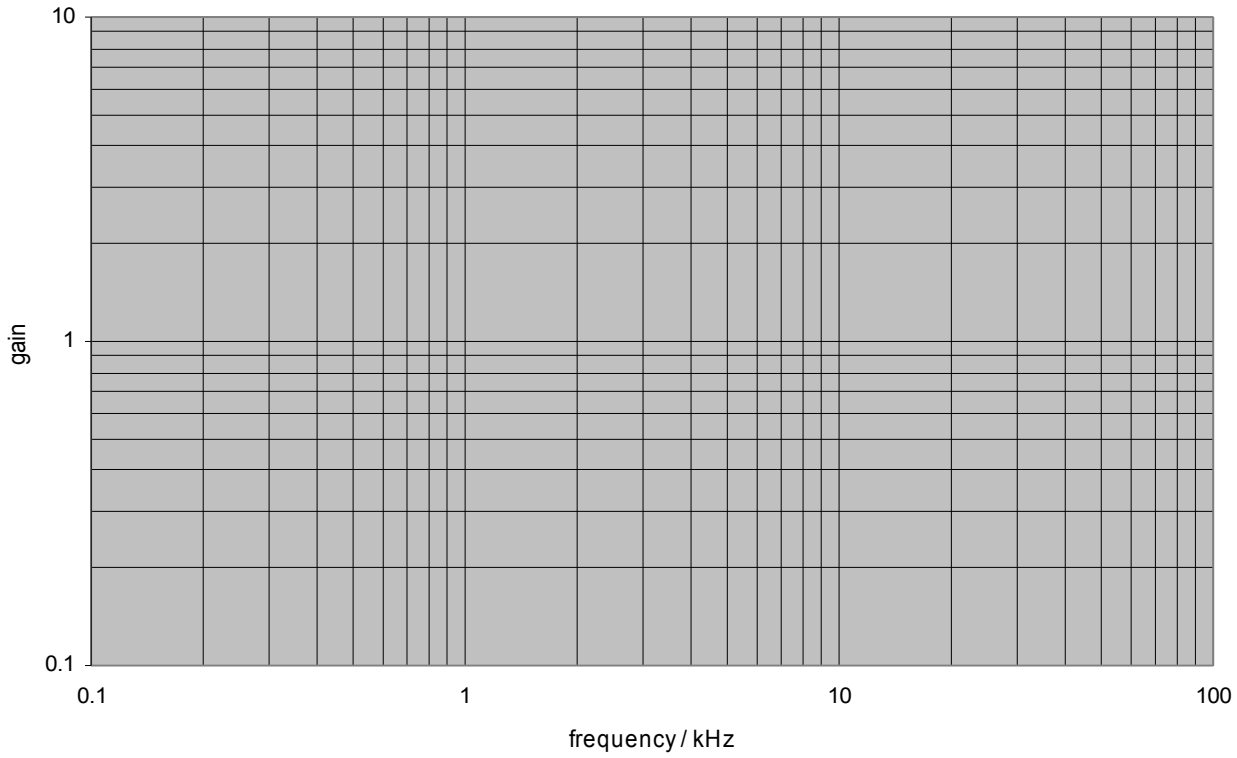
3 Repeat step 2 for the following frequencies: 300 Hz, 1 kHz, 3 kHz, 10 kHz and 30 kHz.

Bass cut filter

You are going to investigate the transfer characteristic of this active bass cut filter.



1 Calculate the break frequency and high frequency gain of the system. Use these values to draw on the axes below a gain-frequency graph for the system, using the two-straight lines approximation.



2 Adjust the signal generator so that the signal at IN is a sine waveform with a frequency of 30 kHz and an amplitude of 500 mV. Record the amplitude of the signal at OUT, and use it to calculate the gain of the system at 30 kHz. Plot the point on the graph.

3 Repeat step 2 for the following frequencies: 10 kHz, 3 kHz, 1 kHz, 300 Hz and 100 Hz.

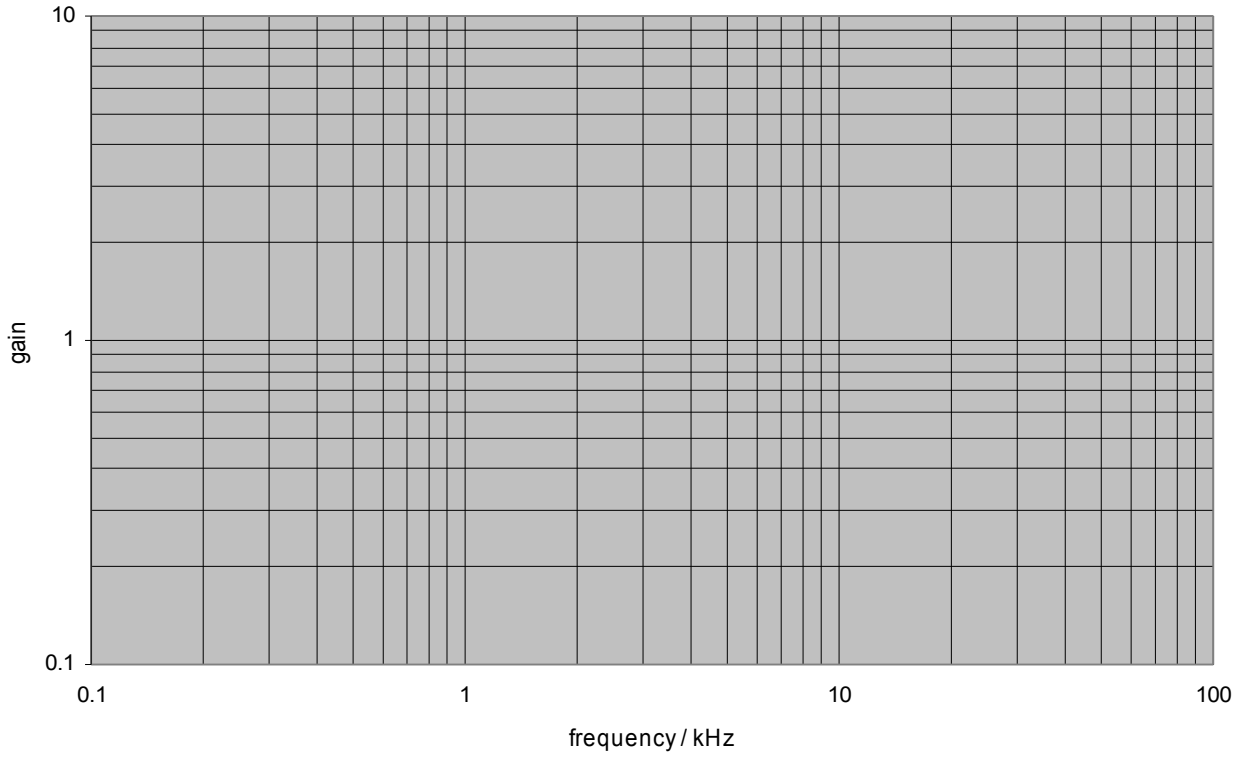
Bandpass filter

You are going to design, assemble and test a bandpass filter.

1 The filter is required to behave as follows:

- cut frequencies below 300 Hz
- cut frequencies above 7 kHz
- a gain of 5 between 300 Hz and 7 kHz

Design the bandpass filter. Draw on the axes below a gain-frequency graph for the filter.



2 Assemble the bandpass filter. Use a signal generator and oscilloscope to obtain values of gain across the frequency range 100 Hz to 30 kHz. Plot the points on the graph.