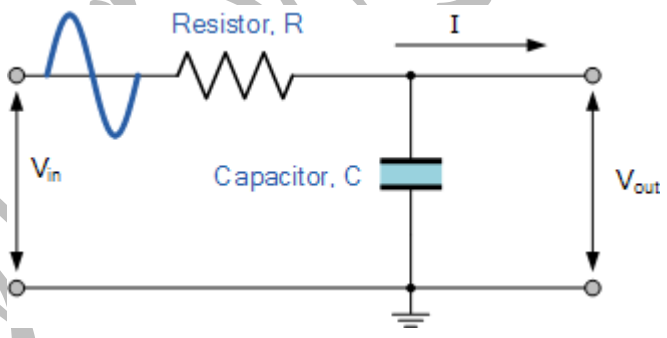

Experment no. (1)

Experiment name : passive RC low pass filter (LPF)

A simple passive **RC Low Pass Filter** or **LPF**, can be easily made by connecting together in series a single Resistor with a single Capacitor as shown below. In this type of filter arrangement the input signal (V_{IN}) is applied to the series combination (both the Resistor and Capacitor together) but the output signal (V_{OUT}) is taken across the capacitor only.

This type of filter is known generally as a “first-order filter” or “one-pole filter”, why first-order or single-pole?, because it has only “one” reactive component, the capacitor, in the circuit.

RC Low Pass Filter Circuit

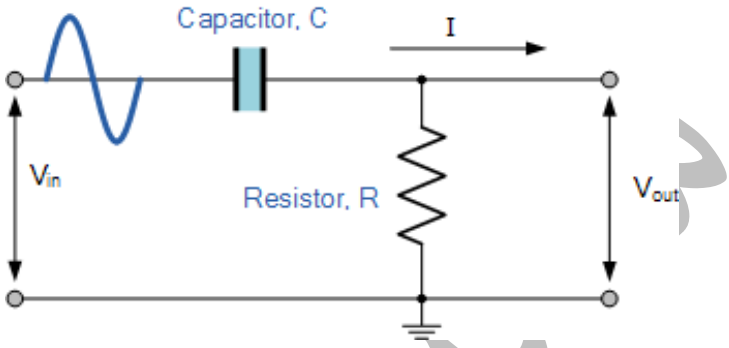


Frequency	Vout	Vin	Gain(Vout/vin)	20logGain
500Hz				
1KHZ				
2 KHZ				
3 KHZ				
4 KHZ				
5 KHZ				
10 KHZ				
15 KHZ				

Experiment name : passive RC HIGH pass filter (HPF)

The passive high pass filter circuit as its name implies, only passes signals above the selected cut-off point, ƒc eliminating any low frequency signals from the waveform.

Consider the circuit below.



In this circuit arrangement, the reactance of the capacitor is very high at low frequencies so the capacitor acts like an open circuit and blocks any input signals at VIN until the cut-off frequency point (ƒC) is reached. Above this cut-off frequency point the reactance of the capacitor has reduced sufficiently as to now act more like a short circuit allowing all of the .input signal to pass directly to the output as shown below in the filters response curve

frequency	Vout	Vin	Gain (Vout/Vin)	20logGain
500HZ				
750HZ				
1KHZ				
2KHZ				
3 KHZ				
4KHZ				
5KHZ				
10KHZ				
15KHZ				

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