EC 160 LAB EXPERIMENT 8

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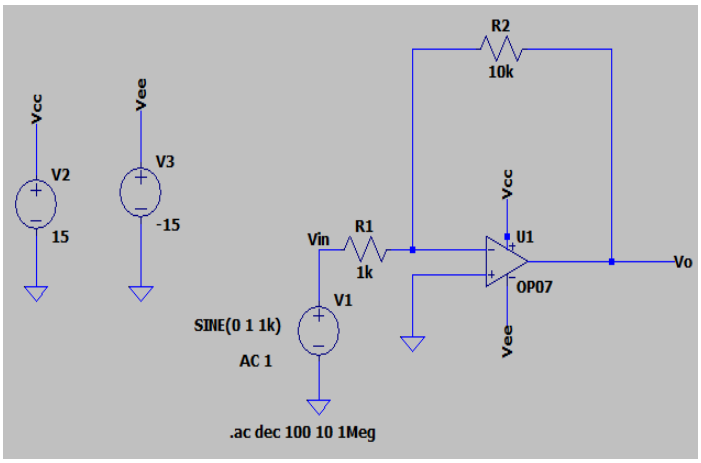
Objective :

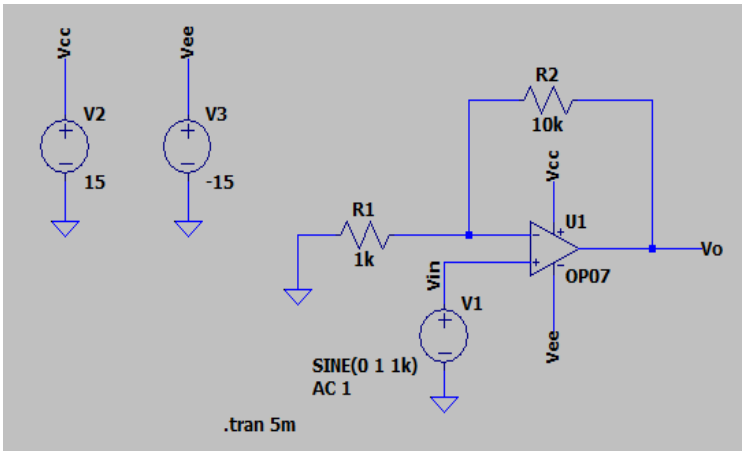
Inverting and Non-inverting operational Amplifier circuits.

1. Circuit Diagram :
   a) Inverting Amplifier:



R1 =1k , R2 =10k, Av(theo.) = -10

b) Non-Inverting Amplifier:



R1 =1k , R2 =10k , Av(theo.) = 11

2. Circuit response at fixed frequency (say at 1kHz) of input signal:

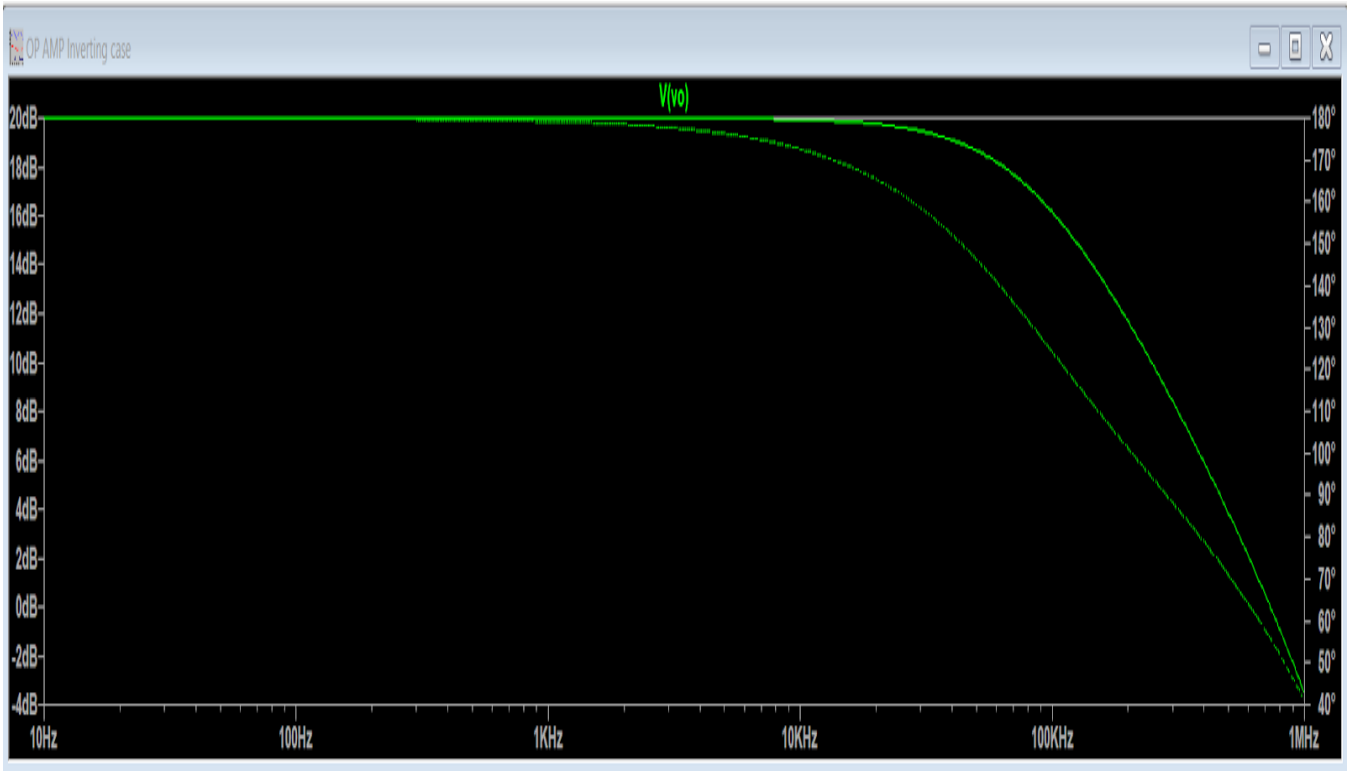
Amplifier ckt.	R1(in kΩ)	R2 (in kΩ)	Theo. Gain	Vi (in mV)	Vo (in V)	Exp. Gain Av=Vo/Vi
Inverting	1k	10k	-10	999.9	-9.994	-9.9949995
	5k	15k	-3	999.5	-2.997	-2.99849925
	10k	25k	-2.5	999.4	-2.497	-2.4984991
Non-Inverting	1	10	11	998.6	10.97	10.9853795
	5	15	4	998.9	3.99	3.99439383
	10	25	3.5	998.8	3.49	3.49419303

3. Frequency response of the inverting op amp:

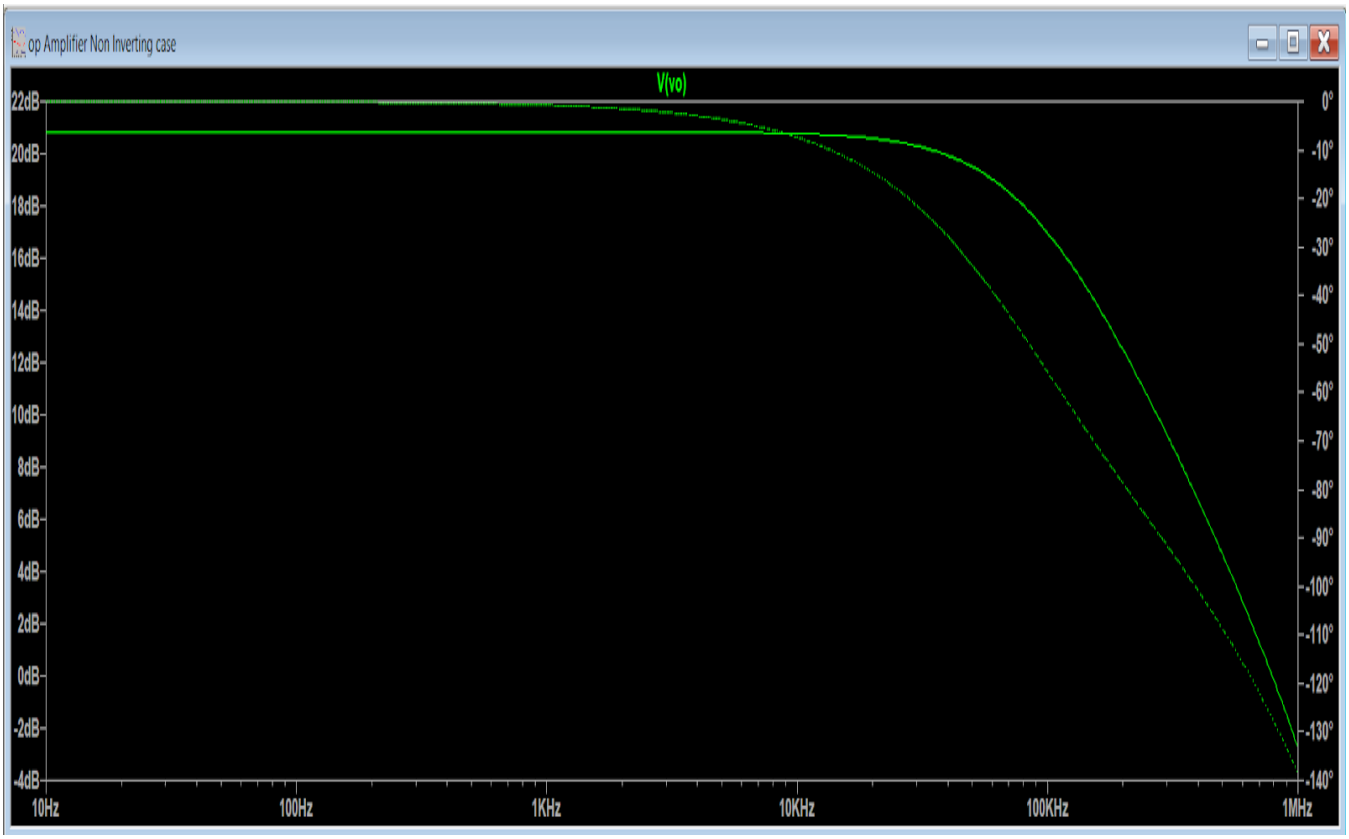
Frequency (in Hz)	Choice-I: R1=5kΩ & R2=15kΩ				Choice-II: R1=10kΩ & R2=25kΩ			
	Vi (in mV)	Vo (in V)	Av=Vo/Vi	Av (in dB)	Vi (in mV)	Vo (in V)	Av=Vo/Vi	Av (in dB)
29.935773	1000	2.9999839	2.9999839	9.5423784	1000	2.4999883	2.4999883	7.9587593
40.215697	1000	2.9999839	2.9999839	9.5423783	1000	2.4999882	2.4999882	7.9587593
59.612286	1000	2.9999838	2.9999838	9.5423782	1000	2.4999882	2.4999882	7.9587593
100.28154	1000	2.9999837	2.9999837	9.5423779	1000	2.4999882	2.4999882	7.958759
199.69459	1000	2.9999831	2.9999831	9.5423762	1000	2.4999878	2.4999878	7.9587579
397.65972	1000	2.9999808	2.9999808	9.5423697	1000	2.4999866	2.4999866	7.9587536
1005.6388	1000	2.9999636	2.9999636	9.5423223	1000	2.4999775	2.4999775	7.9587227
2002.5681	1000	2.9998924	2.9998924	9.5421559	1000	2.4999459	2.4999459	7.9586147
60117.205	1000	2.9328578	2.9328578	9.34582	1000	2.4630463	2.4630463	7.8294517

4. Plot Gain (in dB) vs Frequency :

a) Inverting op Amplifier:



b) Non-Inverting op Amplifier:



5. Cut-off Frequency :
   Choice-I: Inverting op Amp,

   Choice-II: Non-Inverting op Amp

Choice	Experimental cut-off frequency (in kHz)
I	83.339544KHz
II	99.062007KHz

6. Gain Bandwidth Product :

Choice	Experimental product
I	832.04861KHz
II	1087.196KHz

Thank you