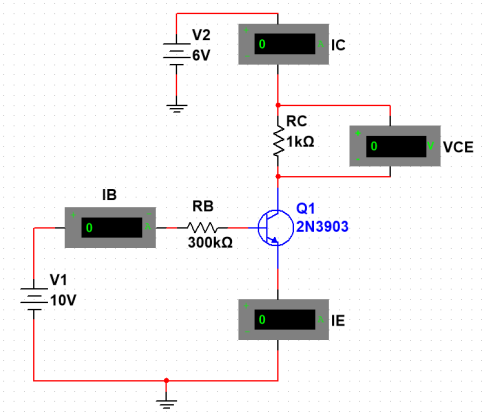
Prelab 7 and 8



Circuit 7.1 Common Collector Circuit in Multisim

V1 (V)	V2 (V)	IB (mA)	IC (mA)	IE (mA)	VCE (V)	β
4	0	0.012	-0.01	0.00	-0.01	-0.661
4	0.5	0.011	0.379	0.39	0.379	34.455
4	1	0.011	0.701	0.712	0.701	63.727
4	1.5	0.011	0.707	0.718	0.706	64.273
4	2	0.011	0.711	0.722	0.711	64.636
4	2.5	0.011	0.716	0.727	0.716	65.091
4	3	0.011	0.721	0.732	0.721	65.545
4	3.5	0.011	0.725	0.736	0.725	65.909
4	4	0.011	0.73	0.741	0.73	66.364
6	0	0.018	-0.011	0.01	-0.011	-0.611
6	0.5	0.018	0.399	0.417	0.399	22.167
6	1	0.018	0.857	0.874	0.856	47.611
6	1.5	0.017	1.195	1.212	1.194	70.294
6	2	0.017	1.203	1.221	1.203	70.765
6	2.5	0.017	1.211	1.229	1.211	71.235
6	3	0.017	1.219	1.237	1.219	71.706
6	3.5	0.017	1.227	1.245	1.227	72.176
6	4	0.017	1.235	1.253	1.235	72.647
8	0	0.025	-0.012	0.012	-0.012	-0.480
8	0.5	0.025	0.41	0.434	0.41	16.400
8	1	0.025	0.878	0.903	0.878	35.120
8	1.5	0.024	1.345	1.369	1.345	56.042
8	2	0.024	1.709	1.733	1.708	71.208
8	2.5	0.024	1.722	1.746	1.722	71.750
8	3	0.024	1.734	1.758	1.734	72.250
8	3.5	0.024	1.745	1.769	1.745	72.708
8	4	0.024	1.756	1.781	1.756	73.167

8	4.5	0.024	1.767	1.792	1.768	73.625
8	5	0.024	1.779	1.804	1.779	74.125
10	0	0.032	-0.014	0.018	-0.014	-0.438
10	0.5	0.032	0.417	0.448	0.417	13.031
10	1	0.032	0.89	0.921	0.89	27.813
10	1.5	0.032	1.367	1.398	1.367	42.719
10	2	0.032	1.838	1.867	1.838	57.438
10	2.5	0.032	2.232	2.263	2.231	69.750
10	3	0.032	2.254	2.285	2.254	70.438
10	3.5	0.032	2.269	2.3	2.269	70.906
10	4	0.032	2.284	2.315	2.283	71.375
10	4.5	0.032	2.299	2.329	2.298	71.844
10	5	0.032	2.313	2.344	2.313	72.281
10	5.5	0.032	2.328	2.359	2.328	72.750
10	6	0.032	2.342	2.374	2.342	73.188

Table 7.1 Multisim calculations

Graph 7.1 IC vs VCE

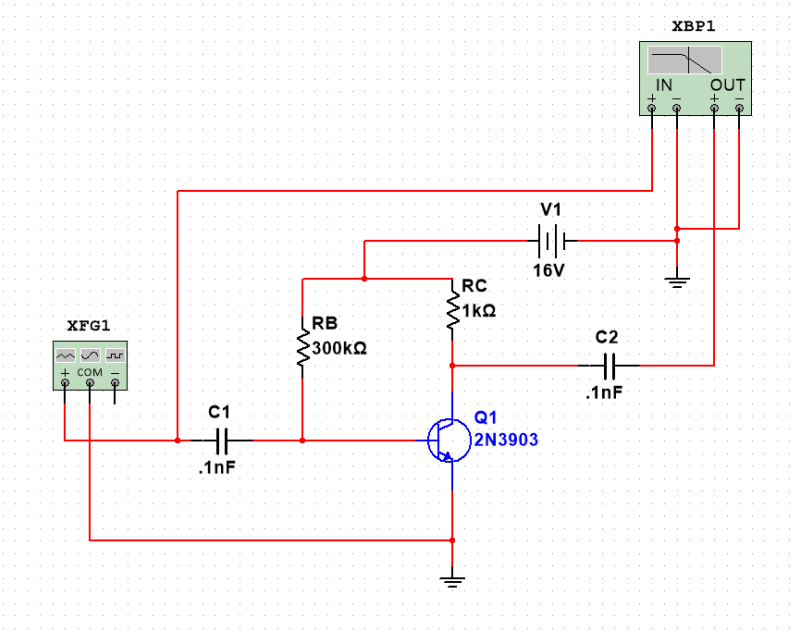


Figure 8.1 Common Collector Circuit in Multisim

Frequency (Hz)	Vin (mV)	Vout (mV)	Gain (dB)
10	500	0.281	-65.000
30	500	0.846	-55.435
60	500	1.694	-49.401
100	500	2.801	-45.032
200	500	5.610	-39.000
500	500	13.947	-31.090
1000	500	28.117	-25.000
2000	500	57.302	-18.816
5000	500	139.018	-11.118
10000	500	281.171	-5.000
15000	500	428.519	-1.340
20000	500	571.110	1.155
50000	500	1416.022	9.042
75000	500	2120.655	12.550
100000	500	2811.707	15.000
150000	500	4173.208	18.430
200000	500	5465.375	20.773
500000	500	11430.626	27.182
750000	500	14325.837	29.143
1000000	500	16000.001	30.103
1500000	500	17640.870	30.951
2000000	500	18340.873	31.289

Table 8.1 VIN, VOUT, Gain according to frequency

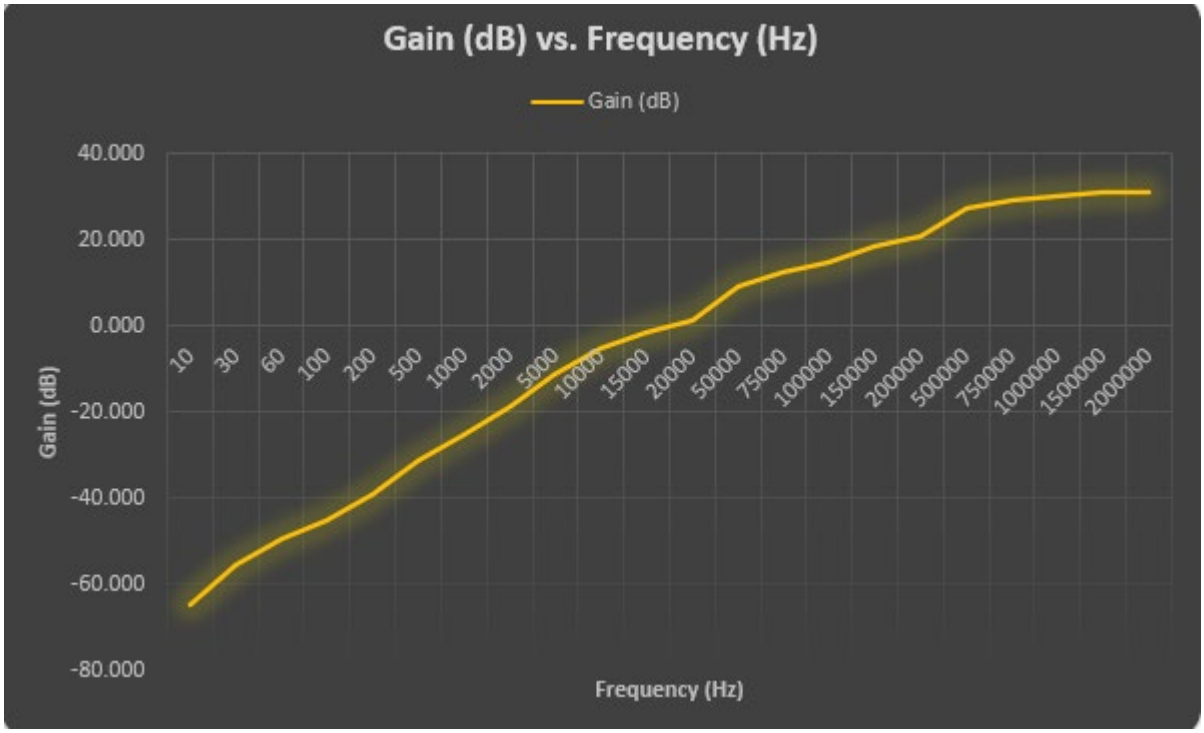


Table 8.1 Gain vs Frequency