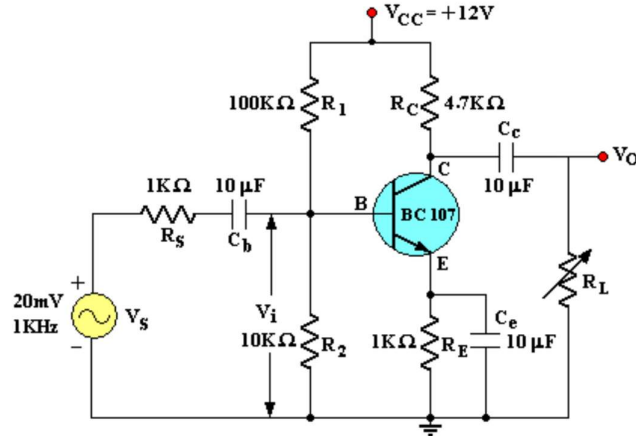
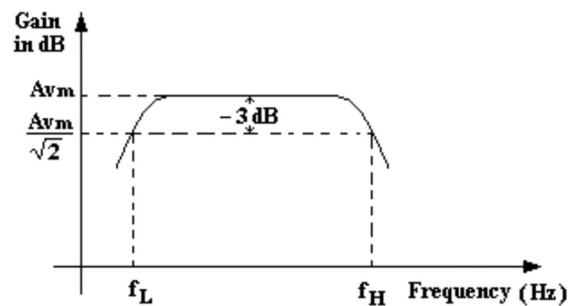


## การทดลองที่ 6 CE TRANSISTOR AMPLIFIER



Common Emitter Transistor Amplifier

### MODEL GRAPH:



**AIM:** To Find the frequency response of a Common Emitter Transistor Amplifier and to find the Bandwidth from the Response, Voltage gain, Input Resistance, output resistance.

### APPARATUS:

No.	Name	Range / Value	Quantity
1	Dual Regulated D.C Power supply	0-30V	1
2	Transistor	BC107	1
3	Resistor	1K 4.7K 10K 100K	1
4	Capacitors	10uF	3
5	Potentiometer	10K	1
6	Signal Generator (0 – 1MHz)	0-1MHz	1
7	Bread Board and connecting wires		1
8	Dual Trace DOSC	20MHz	1

**PRECAUTIONS:**

1. Check the wires for continuity before use.
2. Keep the power supply at Zero volts before Start
3. All the contacts must be intact

**PROCEDURE:**

1. Connect the circuit as the Fig.1., Apply  $V_{cc}$  of 12 Volts DC.
2. Apply I/P Voltage of  $20\text{mV}_{\text{rms}}$  at 1KHz from the Signal Generator and observe the O/P on DOSC.
3. Vary the frequency from 50 Hz to 1MHz in appropriate steps and note down the corresponding O/P Voltage  $V_o$  in a tabular form.
4. Calculate the Voltage Gain  $A_v = V_o/V_s$  and note down in the tabular form.
5. Plot the frequency (f) Vs Gain ( $A_v$ ) on a Semi-Log Graph sheet
6. Draw a horizontal line at 0.707 times  $A_v$  and note down the cut off points and the Bandwidth is given by  $B.W = f_2 - f_1$ .

**INPUT RESISTANCE  $R_i$ :**

1. Apply I/P Voltage of 20mV at 1KHz from the Signal Generator and observe voltage  $V_i$  across  $R_2$  on DOSC.
2. Without Disturbing the setup note  $V_i$ .
3. find  $I_i = (V_s - V_i) / R_s$  and  $R_i = V_i / I_i$  Ohms.

**OUTPUT RESISTANCE ( $R_o$ ):**

1. Apply I/P Voltage of 50mV at 1KHz from the Signal Generator and observe the o/p on DOSC
2. Connect a Potentiometer across the O/P terminals and without disturbing  $V_s$  adjust the potentiometer such that o/p falls to  $V_o/2$
3. The Resistance of the potentiometer is equal to  $R_o$ .

**RESULT:**

BandWidth	B.W	= $f_2 - f_1$ = _____	Hz
Voltage Gain	$A_v$	= _____	
Input Resistance	$R_i$	= _____	ohms
Output Resistance	$R_o$	= _____	ohms

**TABULAR FORMS:**

S.No	Frequency (Hz)	O/P Voltage, $V_o$ (Vrms)	Voltage Gain $A_v = V_o/V_i$	$A_v$ in dB $= 20 \log (A_v)$
1	100			
2	200			
3	300			
4	500			
5	700			
6	1K			
7	3K			
8	5K			
9	7K			
10	10K			
11	30K			
12	50K			
13	70K			
14	100K			
15	300K			
16	500K			
17	700K			
18	1M			

**VIVA QUESTIONS:**

1. What is an Amplifier?
2. How many types of an Amplifiers?
3. What is meant Band width, Lower cut-off and Upper cut-off frequency?
4. How much phase shift for CE Amplifier?
5. What are the applications?