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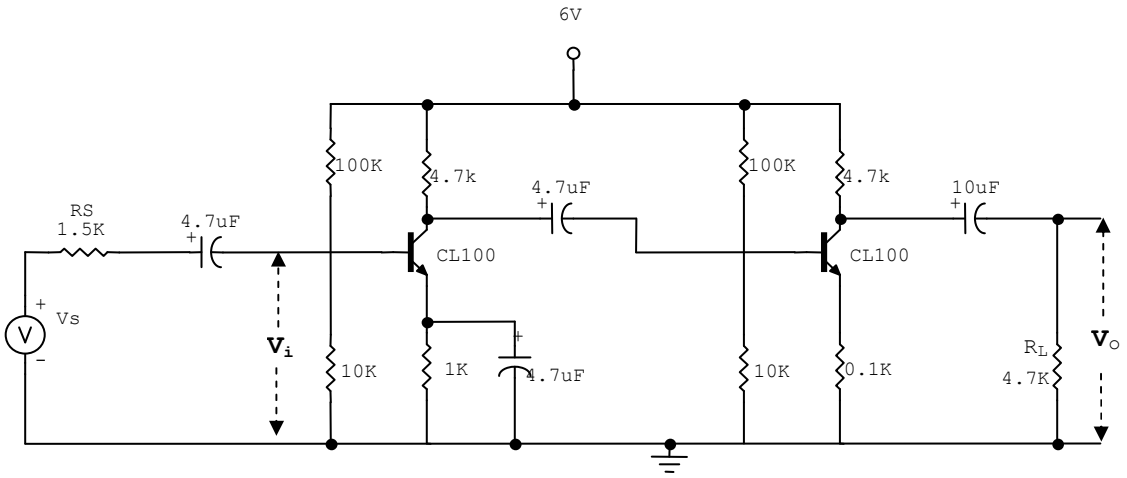
SINGLE STAGE RC COUPLED AMPLIFIER

AIM: To determine Bandwidth, Input &Output impedances, voltage gain, current gain and power gain of the Single Stage RC Coupled Amplifier.

APPARATUS :

S.No.	Name of the Apparatus	Range	Quantity
1.	CL100	-	2No.
2.	Power Supply	0-30V	1No.
3.	Resistors (Ω)	100K, 10K, 4.7K	Each 2No.
		4.7K, 1K, 1.5K, 100	Each 1No.
4.	Capacitor	4.7μF,	3No.
		10μF	
5.	CRO	-	1No.

CIRCUIT DIAGRAM:



PROCEDURE:

1. Connect the circuit as shown in figure.

2. Apply the biasing voltage of 10 V.

3. Adjust the Signal generator voltage so as to get V_i =15mV and measure V_s.

4. Vary the frequency of the signal generator from 100Hz to 1MHz, in steps and note down corresponding output voltage.

5. In the mid band range remove R_L and note down the output which is V_{NL}.

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6. Plot the frequency response and determine the bandwidth.

7. Calculate the input and output impedance in the mid band range using

$$R_i = \frac{V_i R_S}{V_S - V_i} =$$

$$R_O = \frac{V_{NL} - V_{FL}}{V_{FL}} \times R_L =$$

8. Calculate the current gain(A_I), voltage gain(A_V) and power gain(A_P) using

$$A_I = \frac{I_O}{I_i} =$$

$$I_O = \frac{V_O}{R_O} =$$

$$A_V = \frac{V_O}{V_i} =$$

$$I_i = \frac{V_s - V_i}{R_s} =$$

Power gain (A_P) = A_V. A_I =

TABULATION :

V_s= **V_{NL} =**

S No.	**Frequency** (Hz)	**V_i** (mV)	**V_o** (V)	**$A_V = \frac{V_o}{V_i}$**	**20 log A_V**

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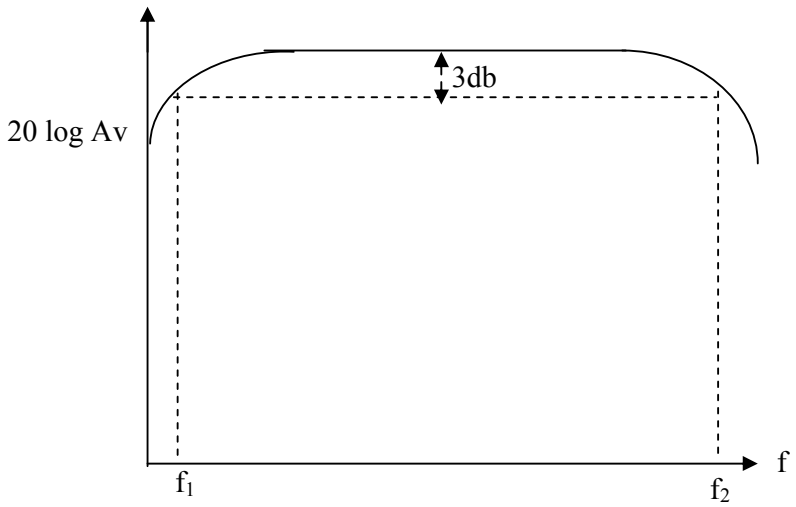
S No.	Frequency (Hz)	V_i (mV)	V_o (V)	$A_V = \frac{V_o}{V_i}$	20 log A_V

MODEL GRAPH:



Bandwidth = $f_2 - f_1$ =

RESULTS: Input impedance(R_i) =

Output impedance(R_o) =

Current gain(A_i) =

Voltage gain(A_v) =

Power gain(A_P) =

Bandwidth =