Experiment No. 9

To plot the frequency response curve of a tuned amplifier and determine its Objective:

bandwidth.

Apparatus Used:

CRO

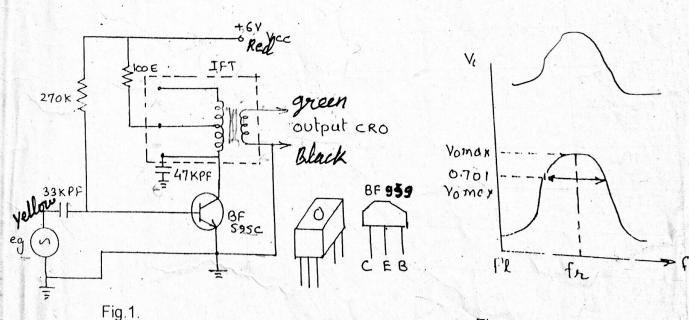
Function generator Power supply Connecting wires, probes

Tuned amplifier arwit.

Theory: A tuned circuit is normally made by connecting an inductor L and a capacitor C in parallel. The circuit offers infinite impedance at its resonant frequency fr given by

 $f_r = \frac{1}{2\pi} \sqrt{\frac{1}{LC}}$. The voltage across the tuned circuit at the resonant frequency is maximum

and falls off on either side of this frequency. When this circuit is connected as the load to an amplifier, the resulting network is called a tuned amplifier. Fig. | shows such an amplifier and it is normally used to select a narrow band of frequencies on ellier side of the resonant frequency. A plot of amplifier gain vs frequency for a tuned amplifier is shown in Fig.2. The gain or output voltage V_0 (since input voltage V_1 is fixed) panks to the maximum Vo max at the frequency fr and declines on either sides of fr.



Procedure:

1. Assemble circuit according to diagram on the bread board (Fig.1). Connect sine wave Assemble circuit according to diagram on the broad poars (rig. 1). Conne generator to the input terminal of the circuit through a coupling capacitor. Procedure:

Connect OV D.C. supply to the circuit accordingly.

3. Connect CRO at the output terminals of the circuit. 4. Vary frequency of input signal and note the output voltage from CRO.

Plot (V_0 vs f) curve and find V_{0max} .

Find the bandwidth of the amplifier as quoted in the theory above i.e. the difference in falls to 0.707 V_{0max} on either sides of f 5. Plot (Vo vs f) curve and find Vomax. Find the bandwidth of the amplifier as quoted in the finds, which the gain of V_{0max} falls to 0.707 V_{0max} on either sides of f_r . Solory, corico pultronna

Observations:

SI. No.	ns: pe V _i = volts. (fixed) Input Signal Frequency f (Hz)	Output Voltage V ₀ (Volts)
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Calculations:

1.	Maximum Output Voltage V _{0max} =	Volts.
2.	Resonant Frequency =	Hz.
3.	Bandwidth = f f f lower =	Hz.

Result:

Precautions: