APC

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

LABORATORY WORK SHEET

Date: 03:06:2022

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Exp No: 07 Experiment Name: class A and class B power amplifier

DAY TO DAY EVALUATION:

	Preparation	Algorithm / Performance in the Lab	Source Code / Calculations and Graphs	Program Execution / Results and Error Analysis	Viva	Total
Max. Marks	4	4	4	4	4	20
Obtained	3	3	4	4	4	18

Signature of Lab I/C

START WRITING FROM HERE:

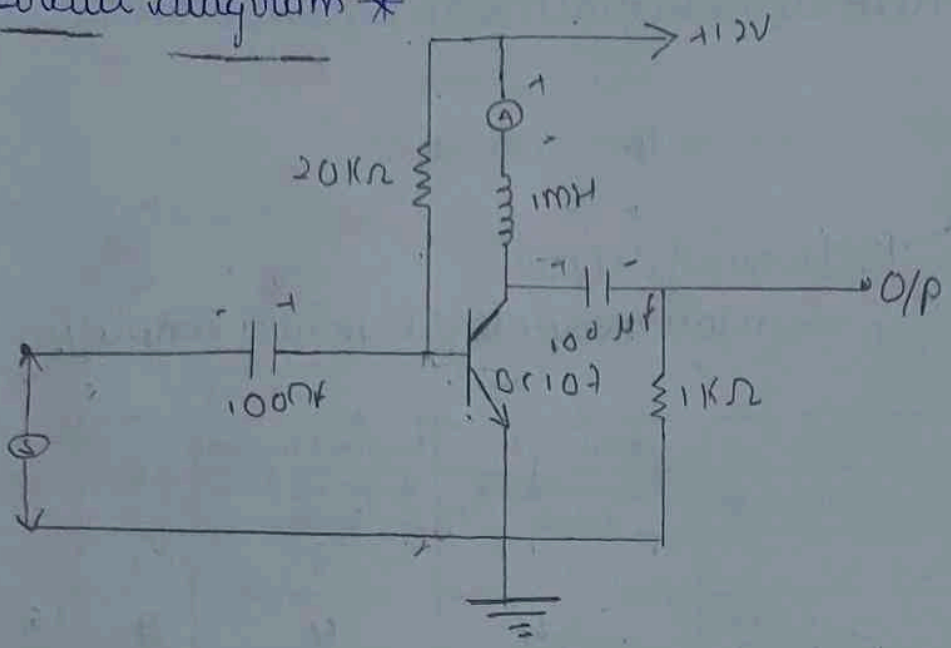
Aim:- To Study and plot the frequency response of class A and class B power amplifier.

Software Required:- Multism analog devices edition 13.0

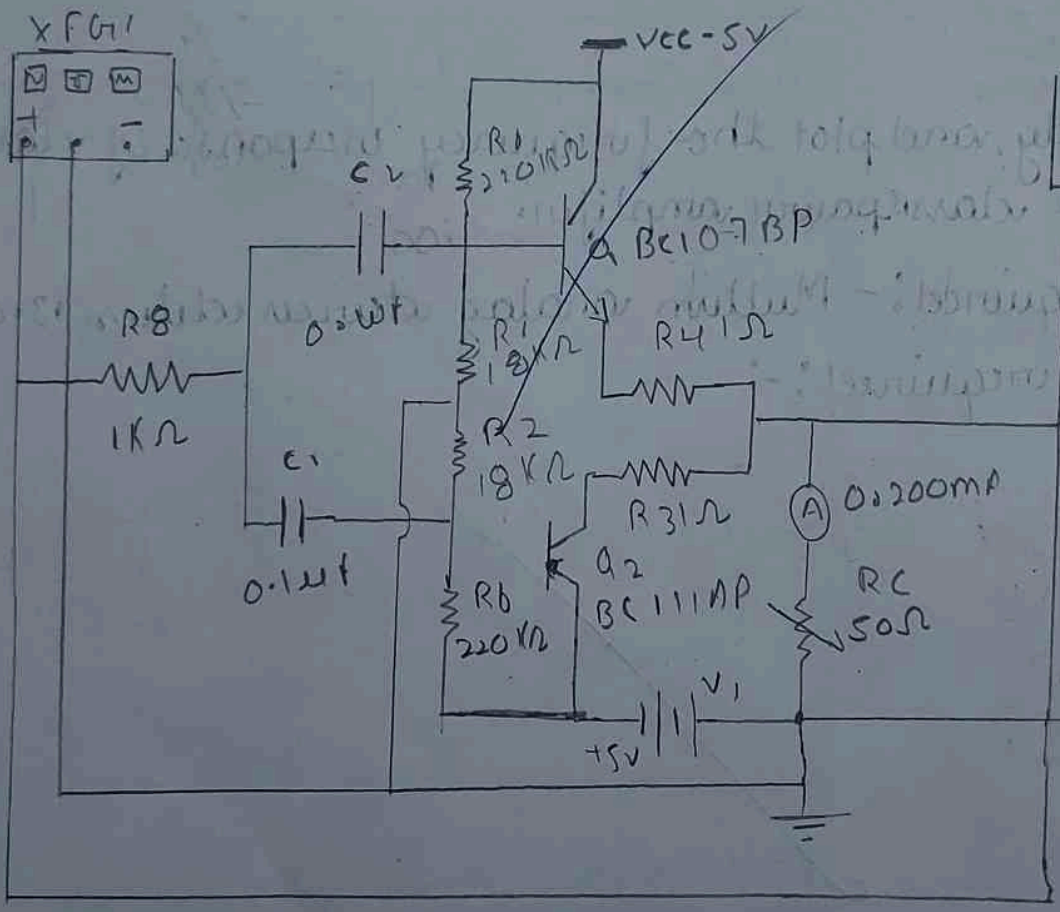
components required:-

- Trainer kit
- Transistors
- Resistors
- capacitors
- DC supply
- Ammeter
- Voltmeter
- Function generator
- CRO
- connecting wires and probes.

circuit diagram



class A power amplifier



class B - power amplifier

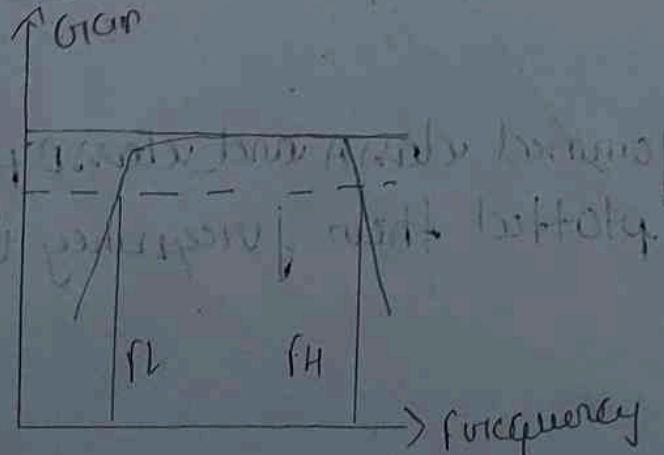
Theory

power amplifier are mainly used to deliver more power to deliver more power to the load. To deliver more power it requires large inputs signals so generally power amplifier are preceded by a series of voltage amplifiers. In class A Q-point is located in the middle of dc load line. under zero signal condition, maximum power dissipation occurs the transistors. The max theoritical efficiency is 50.

Procedure:-

- connect the circuit as shown in the figure.
- Adjust input signal amplitude in the Function generator and observed as amplified voltage at the o/p without distortion
- By keeping input signal voltage say at 150mv, Vary the input signal frequency from 0-1MHz as shown in tabular column and note the corresponding o/p voltage.
- Measure & note the zero signal dc current by disconnecting the function generator from the circuit.
- Calculate efficiency & plot the graph.

Expected graph



Tabular columns

Frequency	Gain of class-A	Gain of class B
50Hz	12.7dB	-15.4dB
100Hz	18.8	-9.5
200Hz	24.8	-3.7
500Hz	33.7	3.6
1KHz	36.8	8.4
5K	40.8	12.9
7K	41	13
10K	41	13.2
30K	41.1	13.2
40K	41.1	13.2
100K	41.1	13.2
500K	41	12.6
800K	38.4	11.7
1M	37.4	11

calculations

class A Bw = $f_M - f_L$

= 900 - 1.4K

= 898.6Hz

class B = Bw = $f_H - f_L$

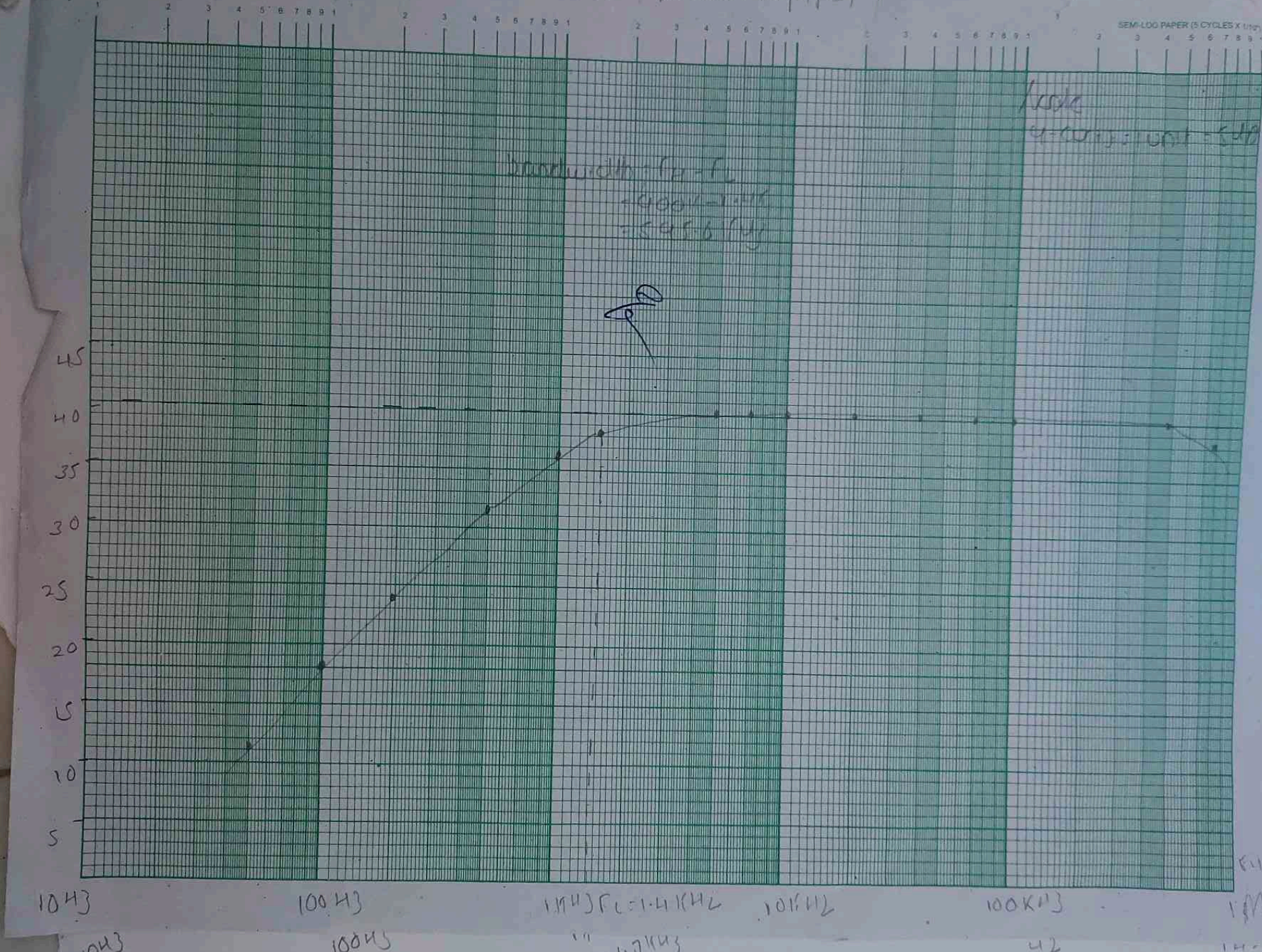
= 1M - 1.71(Hz)

= 998.3(Hz)

Result

Thus performed class A and class B power amplifiers and plotted their frequency response.

CLASS A - power Amplifier



class-B power amplifier