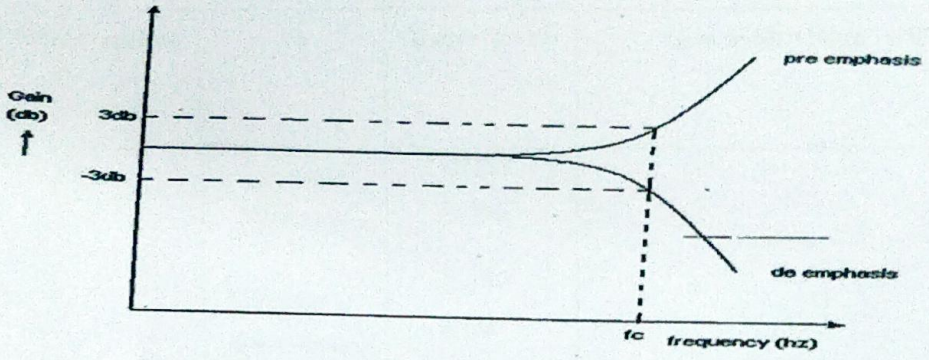
MODEL GRAPH



OBSERVATION FOR PRE-EMPHASIS:

Vi= 2V

Frequency(Hz)	Vo	Gain= Vo/Vi	Gain in dB=20log(Vo/Vi)
500 Hz	960 mV	0.48	-6.375
600 Hz	1.16V	0.58	-4.731
700 Hz	1.40V	0.7	-3.098
800 Hz	1.60V	0.8	-1.938
900 Hz	1.80V	0.9	-0.915
1k Hz	2.08V	1.04	0.340
1.1k Hz	2.36V	1.18	1.437
1.2k Hz	2.68V	1.34	2.734
1.3k Hz	2.96V	1.48	3.405
1.4k Hz	3.24V	1.62	4.190
1.5k Hz	3.56V	1.78	5.008
1.6k Hz	3.88V	1.94	5.756
1.7k Hz	4.2V	2.1	6.444
1.8k Hz	4.48V	2.24	7.004
1.9k Hz	4.76V	2.38	7.551
2k Hz	5.6V	2.8	8.943

OBSERVATION FOR DE-EMPHASIS

Vi= 1V

Frequency(Hz)	Vo	Gain= Vo/ Vi	Gain in dB =20log(Vo/Vi)
500	920mV	0.920	- 0.724
600	880mV	0.880	- 1.11
700	880mV	0.880	- 1.11
800	840mV	0.840	- 1.514
900	760mV	0.760	- 2.383
1K	720mV	0.720	- 2.853
1.1K	720mV	0.720	- 2.853
1.2K	640mV	0.640	- 3.876
1.3K	640mV	0.640	- 3.876
1.4K	600mV	0.6	- 4.436
1.5K	600mV	0.6	- 4.436
1.6K	600mV	0.6	- 4.436
1.7K	560mV	0.56	- 5.03
1.8K	560mV	0.56	- 5.03
1.9K	480mV	0.48	- 6.375
2.0K	480mV	0.48	- 6.375

FREQUENCY RESPONSE (Hz)

Analog and Digital Communication Lab
Experiment 4 Pre Emphasis and De emphasis Circuits using FM

I Pre-Lab Questions

1. What is meant by threshold effect?

Soln. The loss of message signal in the output of the envelope detector due to low CNR-to-noise ratio is called as threshold effect.

2. What is pre-emphasis?

Soln. Pre-emphasis is employed in frequency modulation or phase modulation transmitters to equalize the modulating signal drive power in terms of deviation ratio

3. How the threshold effect can be avoided

Soln. The threshold effect can be improved by applying feedback in demodulator circuits such as phase-locked loops and frequency locked loops so that the output SNR value does not fall rapidly

4. What is fidelity?

Soln. Fidelity refers to the ability of the receiver to produce an exact replica of transmitted signal. It is found at the output stage of the receiver.

5. What is sensitivity and selectivity?

Soln. Selectivity of radio receiver is the ability of a receiver to accept the wanted signal and to reject the unwanted.

Sensitivity of radio receiver is its ability is its ability to amplify the desired weak signal

II Post-Lab Questions

1. What is de-emphasis?

Soln. De-emphasis is the process of reducing the relative amplitude of certain frequencies in a signal that has been exaggerated by pre-emphasis.

2. How to reduce noise during transmission in FM?

Ans. Limiter circuit is used in FM receiver to remove the noise present in the peaks of the received signal and to remove any amplitude variation in the received signal, the output of the limiter has constant amplitude.

3. What should be the time constant in de-emphasis circuit?

Ans. A time constant of 75 μs, where t = RC. Any combination of resistor and capacitor giving this time constant could be satisfactory.

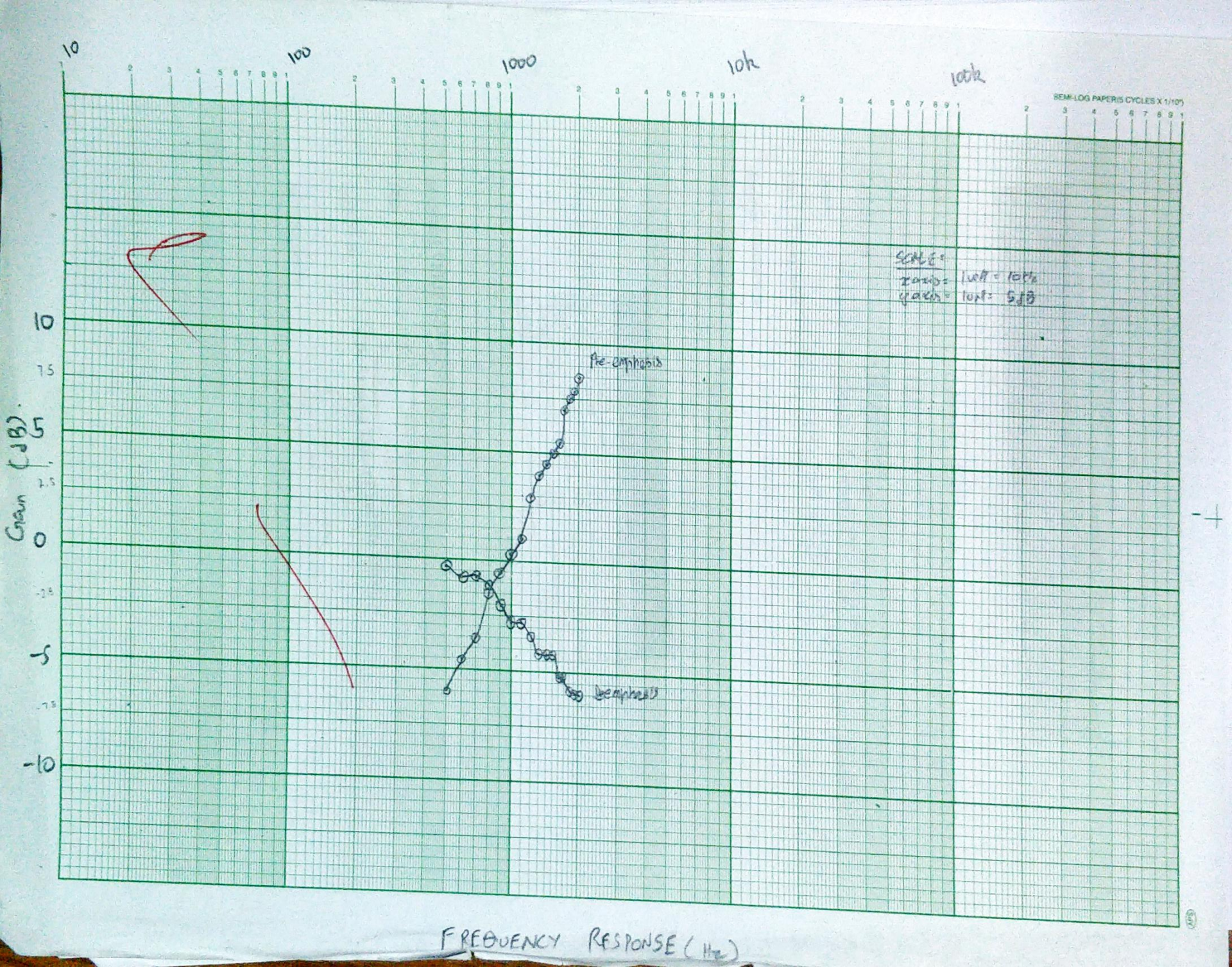
4. Why pre-emphasis is done after modulation?

Ans. Pre-emphasis is employed in frequency modulation or phase modulation transmitters to equalize the modulating signal power in terms of deviation ratio.

5. List some applications of pre-emphasis circuit.

Ans. In high speed digital transmission, pre-emphasis is used to improve signal quality at the output of a data transmission.

FREQUENCY RESPONSE (Hz)


10
100
1000
10k
100k
SEMI-LOG PAPER IS CYCLES X 1/10
SCALE:
10
7.5
5
2.5
0
-2.5
-5
-7.5
-10
Gain (dB).
Pre-emphasis
De-emphasis
FREQUENCY RESPONSE (Hz)