1) Write the features of IC555

Ans. It can be operated in +5V, can with upto 15V.
The source and sink current of the output about 200mA.
Trigger voltage is 1.6 when operating at +5V.

2) In this experiment, what function is carried out by IC555?

Ans A 555 timer can be configured as a delta modulator to perform analog to digital conversion.

3) What is an updown counter?

Ans Bidirectional counters also known as updown counters are capable for counting in either direction through any given count sequence and it can be reversed at any point within their count sequence by using an additional control input

4) What is DAC? What DAC is used in this experiment

Ans DAC → Digital to analog converter.
It can be convert the digital information to analog information
In this experiment, we use DAC 0808.

Post lab

1) Write the merits and demerits of deltamodulation.

Ans Merits:- Since, the delta modulation transmitts only one bit for one sample, therefore the signalling rate and transmission channel bandwidth is quite small for delta modulation compared to PCM.

Demerits:

Slope overload distortion

Granular (or) idle noise.

2) Where delta modulation is employed?

Ans It is modulating mainly used in the transmission of voice information.

3) What are the noises that generated due to delta modulation

Ans Quantizing noise in delta modulation system falls into two categories granular and slope overload noise. Granular exists because the decoded output signal can assume only a specified number of levels in the range of interest.

4) The signal to quantization noise ratio is 153.6. Express in dB

Ans SNR in dB = $20 \log_{10}(153.6)$

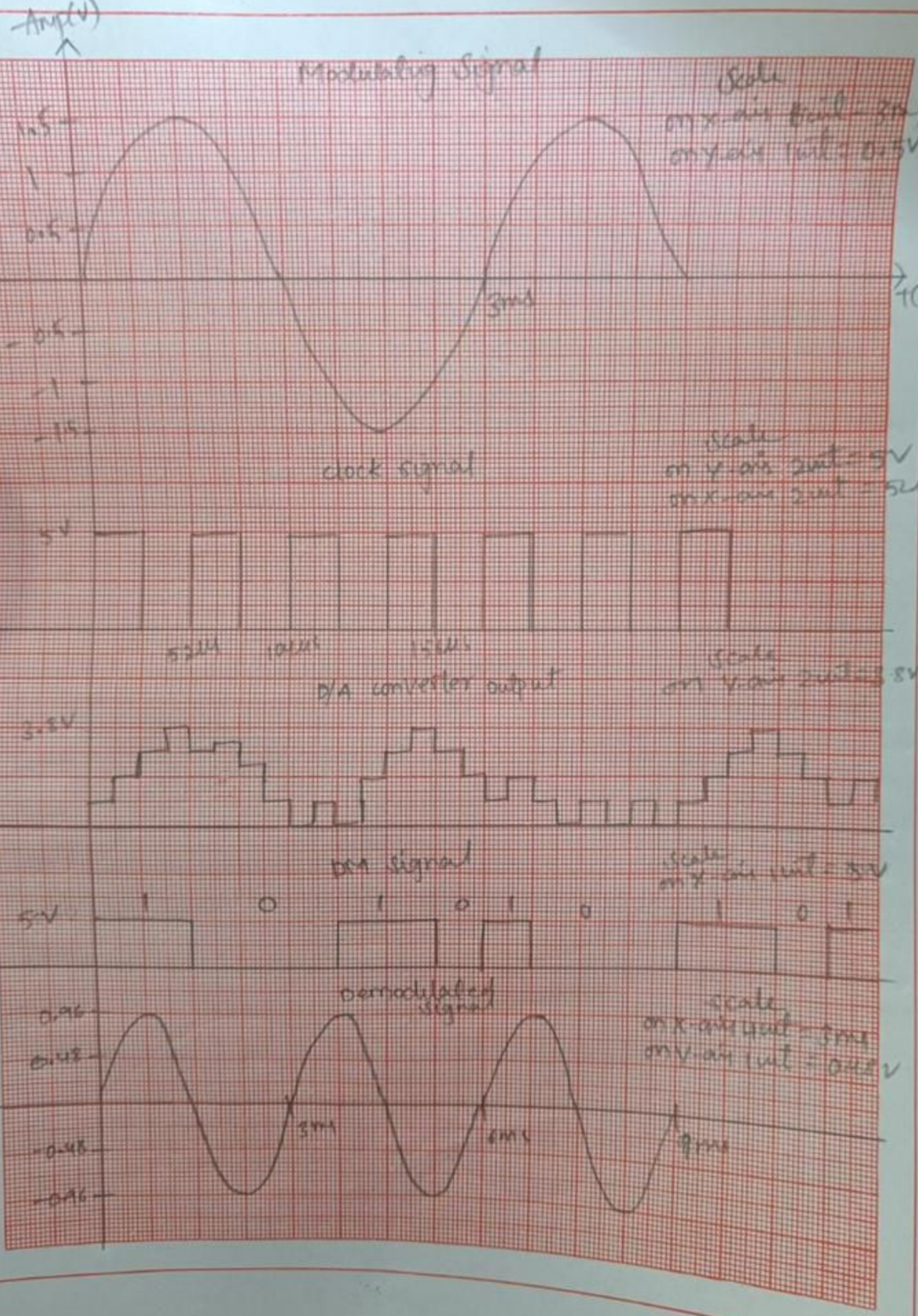
≈ 100.687 dB

5) What are the problems are mitigated in adaptive delta modulation

Ans In ADM quantization noise is present. The other types of errors are mainly avoided.

8. Delta modulation and demodulation

	Amp	Time period
Modulated Signal	3V	3ms
Clock	5V	50μs
DM O/P	5V	100μs
Delta	3.8V	3μs
demodulated	1.85	3ms


Amp(V)
Modulating Signal
Scale
1.5
1
0.5
-0.5
-1
-1.5
3ms
clock signal
5V
5μs
10μs
15μs
D/A converter output
3.5V
pcm signal
5V
1
0
1
0
1
0
1
0
1
demodulated signal
0.4V
0.2V
-0.2V
-0.4V
5ms
6ms
8ms