# Bahgwan Mahavir College of Engg. & Tech., Surat
## E&C / Electronics Department
## Semester 6

# Digital Communication

## Assignment 1

**Submission Date : 03/01/2017**

1 Draw the lock diagram of digital communication and explain the three major signal processing tasks

2 List down the advantages and disadvantages of digital communication

3 Compare analog modulation over digital communication

4 Breifly write a short note on classification of signals.

5 What is the difference between deterministic signal and random signal.

6 What do you mean by the term sampling process.
State, prove and explain the sampling theorem.

7 What do you mean by aliasing effect

8 What is the effect of under sampling?

9 What is interpolation process ? Derive the interpolation formula.

# Assignment 2

**Submission Date:30/01/2017**

1. Draw and explain the block diagram of Pulse Code Modulation system. What is the effect of under sampling?
2. Draw and explain block diagram of ADPCM system.
3. Compare PCM and ADPCM
4. Explain the principle of delta modulation with the help of block diagram. What are the problems associated with the delta modulation.
5. Discuss Uniform and non uniform quantization techniques. What is the advantages of non uniform quantization
6. Derive the formula for signal to quantization noise ratio for PCM
7. Describe the effect of slope overloadinng and hunting in delta modulation.
8. What is companding process in PCM ? State laws for the same.
9. Describe qauntization noise in a PCM
10. compare PCM and Delta modulation in term of their Figure of Merits.

# Assignment 3

**Submission Date : 18/02/2017**

1 What is scrambling ? Explain scrambling and unscrambling process with block diagram and example.

2 What is pulse shaping ? Why pulse shaping is done ? Explain pulse shaping by traversal filter.

3 What is line coding ? What are the ideal requirements of line coding ?

4 obtain power spectral densities for NRZ and biphase data stream 10110101 and compare the same

5 Derive general expression for PSD of a large class of line codes

6 What is intersymbol interference ? Explain Nyquist's criteria for zero ISI

7 What are the functions of regenerative repeater ? Fully explain the zero forcing equalizer with expression

# Assignment 4

**Submission Date : 13/03/2017**

1 Explain QPSK technique with neat sketches. Draw constellation diagram for QPSK.

2 What is the difference between coherent non-coherent detection techniques ? Discuss coherent and non-coherent detection of of FSK signal.

3 Explain BPSK modulation with neat sketch.

4 Compare ASK and FSK in terms of their figure of merits.

5 Explain the detection of PSK with with required block diagram.

6 With diagram and waveforms explain the pronciple of DPSK generator.

7 Explain the principle of QASK transmitter.

8 With diagram explain the generation of BFSK signals.

9 Explain an M-ary FSK digital modulation technique in brief.

# Assignment 5

**Submission Date : 31/03/2017**

1 Define noise figure. Discuss optimum binary receiver with neat sketches.

2 Derive the general expression of Bit Error Rate (BER) for optimum binary receiver.

3 Compare polar, bipolar, on-off, and orthogonal signalling in terms of bit error probability for optimum binary detection.

4 For ASK modulated signal, derive the expression for bit error probability using non-coherent detection

5 write a short note on optimum binary receiver.

6 What is noise figure ?

7 Discuss central limit theorem.

8 Define CDF. What are the important properties of CDF ? State and Prove them.

9 Define PDF. State and prove its properties.

# Assignment 6

**Submission Date : 07/04/2017**

1 Write Short note on convolution coding in brief.

2 Explain the generation and detection of linear block code using suitable example.

3 Explain the generation and detection of linear cyclic code using suitable example.

4 How would you detect and correct burst error in digital communication

5 What is the difference between linear block code and convolution code ?