**DMI COLLEGE OF ENGINEERING**

**DEPARTMENT OF ECE**

**EC2301 –DIGITAL COMMUNICATION**

**UNIT – I**

**PART - A**

1. Give an example for time limited and time unlimited signals.
2. Give the advantages and disadvantages of digital communication.
3. Which parameter is called figure of merit of a digital communication system and why?
4. What is meant by distortion less transmission?
5. Define BER.
6. What are the advantages of PAM?
7. What is meant by basis set?
8. What is the condition for orthogonal?
9. Define noise equivalent bandwidth.
10. State Dimensionality theorem.
11. What is GSOP?
12. Write the expression for bandwidth of digital signal.
13. Write the expression for Linear filter channel.
14. Draw the basic block diagram of digital communication system.
15. Define Half power BW.
16. Define PWM.
17. How is PDM converted into PPM message?
18. What the applications of dimensionality theorem?
19. Why are the signals represented geometrically?
20. How can BER of the system be improved?

**PART - B**

1. Explain how PWM and PPM signals are generated.
2. Classify channels. Explain the mathematical model of any two communication channels.
3. Draw a neat block diagram of a typical digital communication system and explain the function of the key signal processing blocks.
4. Distinguish between base band and band pass signaling.
5. Explain Binary symmetric channel and Gaussian channel with their mathematical models.
6. Derive Geometrical representation of signal.
7. Explain the procedure for obtaining from the basis set.
8. Explain the mathematical models of communication channel.
9. Explain the concept of PWM and PAM.
10. Obtain the orthonormal basis function for the set of waveforms using GSOP.

**UNIT – II**

**PART - A**

1. State sampling theorem.
2. What is quantization error.
3. Why is prefiltering done before sampling?
4. Define quantization noise power.
5. State sampling theorem.
6. What are the limitations of delta modulation?
7. What should be the pass band for anti aliasing and smoothing filters used with pulse modulation / demodulation systems?
8. Why compressors are used in PCM?
9. Draw the block diagram of transmitter and receiver sections of DPCM.
10. What do you understand by the term aliasing?
11. A band pass signal has the spectral range that extends from 20 kHz to 82 kHz. Find the acceptable range of sampling frequency fs.
12. What is the SNR of PCM system if number of quantization levels is 28?
13. Define pulse position modulation scheme with a suitable diagram.
14. What is the advantage of delta modulation over PCM.
15. What are the two type of quantization error that occurs in delta modulation.
16. Define nyquist rate.
17. Compare uniform and Non uniform quantization.
18. What is meant by temporal wave form encoding.
19. What is the difference between DPCM and DM?
20. What is the minimum BW required to transmit a PCM signal?

**PART – B**

1. (i)Explain a uniform quantization process.

(ii)Write note on temporal waveform coding.

1. (i)Explain a spectral waveform encoding process.

(ii)Compare various speeches encoding method.

1. Draw the block diagram of differential PCM and explain the function performed by each block.
2. What is meant by slope overload distortion in DM? What is the condition to be satisfied to avoid this situation?
3. With necessary sketches and expressions, briefly explain about flat top sampling.
4. Derive expressions for the quantization noise and signal to noise ratio in a PCM system using uniform quantizer
5. Derive the expression for SNR in PCM system and compare it with delta modulation.
6. Discuss the principle of Adaptive Delta modulation in detail.
7. (i)Give an account of the advantages and limitations of PCM.

(ii)Explain about model based encoding.

1. Draw the block diagram of adaptive subband coding scheme for speech signal and explain.