



# MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)  
Rasipuram - 637 408, Namakkal Dist., Tamil Nadu.

## Department of Electronics and Communication Engineering Question Bank - Academic Year (2021-22)

**Course Code & Course Name** : 19ECC10- DIGITAL COMMUNICATION SYSTEMS  
**Name of the Faculty** : Mr.P.Madhavan  
**Year/Sem/Sec** : III/V/A, B and C

### Unit-I : SAMPLING PROCESS & WAVE FORM CODING

#### Part A ( 2 Marks)

1. Give the mathematical form of sampling process
2. List out uses of sampling theorem
3. Define instantaneous sampling
4. What is anti alising effect
5. What is PWM
6. List out the types of Quantization
7. Define bandwidth.
8. Transfer 01101001 in to Manchester code
9. What is SNR
10. Define processing gain.

#### Part B ( 16 Marks)

1. Drive the expression for the sampling process in time domain.
2. What are all the types of sampling technique and explain about any two.
3. a. Explain the generation of PAM with neat circuit diagram.  
b. Explain the quantization process with PCM block diagram.
4. Write brief notes on 1) TDM(8 ) 2) FDM
5. Compare DM with ADM and explain linear prediction filter.

## Unit-II : BASEBAND PULSE TRANSMISSION

### Part A ( 2 Marks)

1. Define matched filter
2. What is decision device
3. Draw the block diagram of base band binary data transmission system
4. What is Nyquist channel
5. Draw the frequency and time response of raised cosine spectrum
6. What you mean by correlative level coding
7. Define LMSA
8. What is M -ary
9. List out the use of eye patterns
10. Define zero crossing effect

### Part B ( 16 Marks)

1. Derive the expression for the matched filter and prove any one property.
2. Prove the effect ISI using necessary block diagram and design.
3. Write brief notes on Nyquist's criterion for distortion less base band binary transmission.
4. Explain the six array PAL transmission.
5. Why do us adoptive equalizer and design any one type of adoptive equalizer.

## Unit-III : PASS BAND TRANSMISSION

### Part - A ( 2 Marks)

1. Define FSK
2. Draw the Basic block diagram of FSK
3. Define PSK
4. Draw the wave form of the PSK
5. What is MSK
6. Define Non-coherent FSK
7. Differentiate coherent FSK from Non-coherent FSK
8. What do you mean by Probability error.
9. Define Passband transmission.
- 10 Draw the baseband signal.

**Part B ( 16 Marks)**

1. Derive the expression for the BPSK technique.
2. Explain the MFSK with neat circuit diagram.
3. Draw the space diagram of DPSK and explain about the same.
4. Derive the error probability expression for the MPSK and QPSK.
5. Compare the all types of Passband transmission.

**Unit-IV: ERROR CONTROL CODING**

**Part A ( 2 Marks)**

1. Define the Channel coding
2. List out the uses of the Channel Coding
3. Differentiate Sourced coding from the Channel coding.
4. Prove any two properties of Block Codes.
5. What is syndrome?
6. Define Code rate.
7. What is BSC?
8. Draw the channel diagram of the BPSK system
9. What is turbo codes
10. Define CRC.

**Part B ( 16 Marks)**

1. Explain the channel coding technique used in the Block codes.
2. What are all the message vectors can be extracted from the code vector that was generated by  $1+X+X^3$ .
3. Explain the Viterbi algorithm for the detection of any two message vectors (One Word) from the code vectors that were generated by (111), (101) and (011).
4. Explain the construction of Block Code and explain how error syndrome is calculated.
5. Explain in detail about Trllis coded modulation.

## Unit – V WIRELESS CHANNELS MODELS

### Part A ( 2 Marks)

- 1) What is meant by frequency reuse?
- 2 State hand off principle
- 3) State the process of finding nearest Co-channel cell.
- 4) Define fading
- 5) Mention the effects of small scale fading
- 6) Name the factors influencing small scale fading.
- 7 Mention the channel classification based on Doppler spread.
- 8) Can you recall the principle of diversity?
- 9) Write the conditions for flat fading.
- 10) Mention the conditions for slow fading.

### Part B (16 Marks)

1. Explain the shadow fading in detail.
- 2 Explain in detail the different techniques used to improve coverage & capacity of cellular System.
- 3 Explain the various types of Handoff processes available.
- 4 Summarize in detail about Interference and system Capacity.
5. Explain in detail about: (i) Polarization diversity. (ii) Time diversity (iii) Frequency diversity.