**Printed Pages: 02** **Sub Code: MEC301**

**Paper Id: 230311** **Roll No.** | | | | | | | | | | |

**M. TECH.**
**(SEM -III) THEORY EXAMINATION 2018-19**
**COMMUNICATION THEORY**

***Time: 3 Hours*** ***Total Marks: 100***

**Note:** Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

**1. Attempt *all* questions in brief.** **2 x 10 = 20**

(a) What is aliasing?
(b) How QPSK is different form BPSK in terms of transmission BW and bit information it carries?
(c) What is Hamming distance?
(d) Compare DSSS and FHSS.
(e) What do you mean by discrete memory less channel?
(f) Define quantization noise.
(g) What is the need of companding?
(h) How can we minimize ISI?
(i) What do you mean by carrier synchronization?
(j) Give the interpolation formula for the reconstruction of the original signal.

## SECTION B

**2. Attempt any *three* of the following:** **10 x 3 = 30**

(a) Explain the generation and detection of QPSK with relevant waveforms.
(b) Write a short note on:
(i)Sources and types of noise (ii) TDM
(c) Compare analog and digital communication. Also write the advantages of digital communication over analog communication.
(d) Explain DPCM system. Also write the disadvantages of DPCM?
(e) Explain PSD of QAM and derive its BER. State the advantages of QAM.

## SECTION C

**3. Attempt any *one* part of the following**: **10 x 1 = 10**

(a) What is matched filter? Derive its expression for matched filter response.
(b) Explain the principle of delta modulation with neat diagrams. How is adaptive delta modulation different from delta modulation?

**4. Attempt any *one* part of the following:** **10 x 1 = 10**

(a) Explain about MSK with the help of its block diagram and constellation diagram.
(b) What the need of equalization? Explain working of equalization. Also classify equalization Techniques.

**5. Attempt any *one* part of the following:** **10 x 1 = 10**

(a) State and proof sampling theorem.
(b) How the optimal detection can be achieved for AGWN channel?

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**6. Attempt any *one* part of the following: 10 x 1 = 10**

(a) Compare various line coding technique and list their merits and demerits.

(b) Explain non-coherent detection methods of binary frequency shift keying scheme.

**7. Attempt any *one* part of the following: 10 x 1 = 10**

(a) What is probability of error and explain its significance?

(b) Compare ASK,FSK,BPSK and QPSK in terms of BW,BER, efficiency, constellation diagram and many more.

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