

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

Time: 3 Hours

Total Marks: 100

**Note** Attempt all Sections if you are unable to attempt any of them, you may attempt it suitably.

**SECTION A**

**1. Attempt question set. 2 x 10 = 20**

- (a) What is aliasing?
- (b) How QPSK is different from 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 prove sampling theorem.
- (b) How the optimal detection can be achieved for AGWN channel?

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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