

TECHNOLOGY SUSN

18ECS14

First Semester M.Tech. Degree Examination, Aug./Sept.2020

Advanced Communication Systems — I

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- a. Explain energy consideration in low pass equivalent signal. Also prove that orthogonality in the baseband implies orthogonality in the passband and not vice-versa. (10 Marks)
 - b. With a neat block diagram of modulator and demodulator, explain low pass equivalent of band pass signals. (10 Marks)

OR

2 a. With necessary equations and signal flow diagram, explain Pulse Amplitude modulation.

(10 Marks)

b. Explain continuous phase frequency shift keying with necessary equations.

(10 Marks)

- Module-2
 Derive and explain error probability of binary antipodal signals.
- (10 Marks)
- b. Explain optimal detection and calculate error probability for ASK signal.
- (10 Marks)

OR

4 a. Explain optimal detection and calculate error probability for bi-orthogonal signaling.

(10 Marks)

b. Explain the probability of error for envelope detection of correlated binary signals. (10 Marks)

Module-3

5 a. With proof, explain the theorem of Nyquist condition for zero ISI.

(10 Marks)

b. Explain symbol by symbol sub optimum detection for controlled ISI.

(10 Marks)

OR

- 6 a. With necessary block diagram and equation, explain optimum maximum likelihood receiver.
 (10 Marks)
 - b. With neat block diagram, explain baseband and complex valued baseband equalizer for QAM and PSK signals. (10 Marks)

Module-4

7 a. Explain zero forcing algorithm for adaptive linear equalizer.

(10 Marks)

b. With a neat diagram, explain decision feedback equalization. Also explain coefficient optimization. (10 Marks)

OR

- 8 a. With neat block diagram, explain steps involved in fast start-up technique for an adaptive equalizer. (10 Marks)
 - b. Explain adaptive decision feedback equalizer.

(10 Marks)

Module-5

9 a. Explain the model of spread spectrum digital communication system. (10 Marks)

b. Explain the applications of DS spread spectrum signals.

(10 Marks)

OR

10 a. With a neat block diagram, explain frequency hopped spread spectrum signals. (10 Marks)

b. Explain initial acquisition phase of time synchronization in spread spectrum systems.

(10 Marks)

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