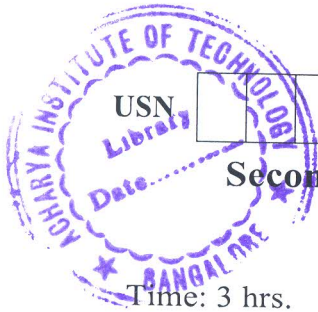


# CBCS SCHEME



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18ECS21

## Second Semester M.Tech. Degree Examination, June/July 2019 Advanced Communication Systems II

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Explain carrier recovery and symbol synchronization in binary PSK receiver with neat diagram. (10 Marks)
- b. With a neat diagram explain early late gate synchronizer. (10 Marks)

OR

- 2 a. What is signal fading? Explain the following fading models.
  - i) Rayleigh fading model
  - ii) Nakagami fading model.(10 Marks)
- b. Define the following with respect to signal fading.
  - i) Multipath intensity profile
  - ii) Multipath spread of the channel
  - iii) Coherence bandwidth
  - iv) Frequency selective channel
  - v) Frequency non selective channel.(10 Marks)

### Module-2

- 3 a. With the help a block diagram, explain generalized structure of a RAKE receiver demodulator used for CDMA cellular communication system. (12 Marks)
- b. Explain the model of binary digital communication system with diversity. (08 Marks)

OR

- 4 a. Explain the principle of orthogonal frequency division multiplexing. (08 Marks)
- b. With the help of block diagram, explain FFT algorithm implementation of an OFDM system. (12 Marks)

### Module-3

- 5 a. Derive an expression for continuous time AWGN channel. (08 Marks)
- b. Write a short notes on :
  - i) Single Input Multiple Output (SIMO)
  - ii) Multiple Input Single Output (MISO)(12 Marks)

OR

- 6 a. With the help of block diagram of coded OFDM, briefly explain the structure of frequency selective channel. (10 Marks)
- b. With the help of relevant expressions explain receiver diversity. (10 Marks)

### Module-4

- 7 a. Explain briefly the multiplexing capability of deterministic MIMO channel via singular value decomposition. (10 Marks)
- b. Write a note on Line of sight SIMO channel. (10 Marks)

OR

- 8 a. Explain briefly the MIMO multipath channel. (10 Marks)  
b. Explain angular domain representation of signals. (10 Marks)

Module-5

- 9 a. Explain briefly with a diagram the V-BLAST architecture. (10 Marks)  
b. Explain Fast Fading MIMO channel its capacity and performance gain. (10 Marks)

OR

- 10 a. Explain briefly with a neat diagram the concept of successive cancelation of streams. (10 Marks)  
b. Explain with neat diagram the operation of MMSE – SIC receivers. (10 Marks)

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