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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.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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) Nokagami 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 sequency 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 valve 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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