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14ECS21

Second Semester M.Tech. Degree Examination, June/July 2018
Wireless Communication

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Explain the physical modeling of a wireless channel with reflecting wall and moving antenna with neat diagram and equations. (10 Marks)
 b. Describe the input/output model of the wireless channel as a linear time varying system. (10 Marks)
- 2 a. With necessary equations, explain the non-coherent detection in the Rayleigh fading channel. (10 Marks)
 b. What is rake receiver? Describe the rake receiver function with its performance analysis in detail with necessary equation. (10 Marks)
- 3 a. What are the types of selection diversity? Describe the types of selection diversity with necessary diagram. (10 Marks)
 b. What is the difference between micro diversity and macro diversity? (04 Marks)
 c. Explain the basic principle of the combining diversity with maximum ratio combining. (06 Marks)
- 4 a. Describe in detail the capacity of the slow fading channel with necessary equation and characteristic graphs. (10 Marks)
 b. Show that the AWGN capacity formula can be used to identify roles of the key resources of power and bandwidth. (10 Marks)
- 5 a. Describe in detail the space diversity and systems based on space diversity and also compare the channel capacities of the various systems. (10 Marks)
 b. With necessary diagram, explain the STBC with Alamouti's code in detail. (10 Marks)
- 6 a. Explain the multiplexing capability of deterministic MIMO channel with capacity via singular value decomposition. (10 Marks)
 b. Prove that the SIMO channel provides a power gain but no degree of freedom gain. (10 Marks)
- 7 a. Describe the basic approach for modeling of MIMO fading channel and MIMO multipath channel. (10 Marks)
 b. With necessary diagram, explain in detail how MIMO differs from smart antenna and also compare between smart antenna and MIMO. (10 Marks)
- 8 a. Explain in detail the purpose of using smart antenna's and also different warp to increase the capacity. (10 Marks)
 b. Write short notes on: (i) Spatial reference algorithm (ii) Temporal reference algorithm. (10 Marks)

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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.