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Total Number of Pages : 1

M.TECH

M.TECH 2ND SEMESTER (AR 18) REGULAR EXAMINATIONS, APRIL/MAY 2019

MIMO SYSTEM

Branch: ECE, Subject Code:MECPE2042

Time: 3 Hours

Max Marks : 70

PART-A**(10 X 2=20 MARKS)****1. Answer the following questions.**

- What is the significance of using MIMO system?
- Define fading in a system.
- Define spatial diversity.
- What is the importance of equalizing wireless channels?
- Narrate the disadvantages of Pre-coding and combining in MIMO systems.
- Represent mathematically a precoder.
- Differentiate between wideband and narrowband beam forming.
- What are the significances of pilot sub carriers?
- What are the applications of Correlative channel sounding?
- What is the importance of fading channel model?

PART-B**(5 X 10=50 MARKS)****Answer any five questions from the following.**

- Briefly explain the fading channel model. [5]
 - How is the channel estimation for CDMA done by Expectation maximization approach? [5]
- How is binary phase-shift keying transmission occurs through a single input single output (SISO) Rayleigh fading channel? [5]
 - How is diversity received in single input multiple output system (SIMO) by equal gain combining? [5]
- How can a MIMO channel degenerate if all scatterers surrounding the transmitter are located along the same direction? [5]
 - Explain briefly the angle-spreads and inter-element spacing in MIMO channels. [5]
- How is the constellation shaped using precoder I? [5]
 - Define Euclidean distance. Mathematically write the expression for Euclidean distance. [5]
- Compare the precoder II and non-linear approach towards constellation shaping. [10]
- Discuss briefly on diversity gain. [5]
 - Briefly describe the multiplexing capability. [5]
- Write short notes on:
 - MMSE channel estimation [5]
 - CDMA [5]

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