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M.Tech ECE (Wireless Communication)EL-V (2018 Batch) (Sem.-3)

SPACE TIME WIRELESS COMMUNICATION

Subject Code : MTWC-PE5B-18

M.Code : 76573

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 1. Attempt any FIVE questions out of EIGHT questions.**
2. Each question carries TWELVE marks.

1. Considering wireless channel as space time (ST) random field, explain Doppler-delay and Angle-delay scattering function. Explain ST degeneracy and time-frequency degeneracy.
2. Describe channel measurements and test channels in details. Define reciprocity principle for a ST wireless channel. For a MIMO sampled signal model, explain frequency flat and frequency selective channel.
3. Derive an expression of capacity of the frequency flat deterministic MIMO channel when channel is known to both the receiver and transmitter.
4. Explain the effect of line of sight (LOS) component on MIMO channel capacity. What is the influence of signal correlation and gain imbalance on diversity performance?
5. For a MISO channel model, compare the performance of transmit diversity when channel is known to transmitter with the case when channel is unknown to the transmitter.
6. For a frequency flat channel, explain signal model, decoding and code word design criteria for space time coding (ST). Describe space time block code (STBC).
7. Explain MMSE and ZF receivers for a MIMO transmission system over frequency flat fading channel.
8. Explain transmitter and receiver model for MIMO-OFDM system. Also, analyze the performance of MIMO-MU system

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.