

(3 Hours)

[Total Marks: 80]

N.B.: (1) Question No. 1 is **Compulsory**.

(2) Attempt any **three** questions out of the remaining **five**.

(3) Each question carries 20 marks and sub-question carry equal marks.

(4) Assume suitable data if required.

1. (a) What is multicarrier Modulation? What is MIMO System? (5)
  - (b) Discuss various channels of IS-95 CDMA system. (5)
  - (c) Illustrate the concept of frequency reuse with proper diagram. (5)
  - (d) What is Doppler shift? What are basic propagation mechanisms of Mobile Radio? (5)
  2. (a) Illustrate diversity multiplexing trade-off in MIMO OFDM Systems. (10)
  - (b) Discuss Indoor and outdoor propagation model of Mobile Radio. (10)
  3. (a) Elaborate various fading effects and discuss types of small scale fading. (10)
  - (b) Examine advantages and limitations of OFDMA technique (10)
  4. (a) Explain with block diagram transmitter and receiver of Direct Sequence spread spectrum Modulation technique. (10)
  - (b) Illustrate Downlink and Uplink physical layer processing in 4G LTE. (10)
  - 5 (a) Examine advantages and limitations of CDMA technique. (10)
  - (b) Distinguish between Raleigh and Rician distributions of Mobile Radio Propagation. (10)
  6. (a) Analyze SIM in 5G with specifications and standardization. (10)
  - (b) Discuss Channel assignment strategies and Handoff strategies. (10)
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