



- 1a) Briefly describe any two application areas of spread spectrum (4 marks)
- b) State and briefly explain any four attributes of CDMA (10 marks)
- 2a) Write short notes on any three of the following circuit mode and channelization methods:
 - (i) Frequency Division Multiple Access (FDMA))
 - (ii) Time-Division Multiple Access (TDMA))
 - (iii) Space Division Multiple Access (SDMA)) 4 marks
 - (iv) Spread spectrum multiple access (SSMA))
- b) What is meant by the term digital baseband modulation? (2 marks)
- 3a) Briefly explain the concept of diversity for fading channels (2 marks)
- b) Describe any four classes of diversity schemes (12 marks)
- 4a) In the context of Pulse Shaping Modulation Techniques, state and describe the various analog-over-analog methods (11 marks)
- b) What are the main features of Delta modulation? (3 marks)
- 5a) What is the theoretical maximum data rate which can be supported in a 200 kHz channel for SNR = 10 dB, 30 dB. How can this be compared with the GSM standard. (10 marks)
- b) State and explain the factors that influence the choice of digital modulation (4 marks)
- 6a) An FM transmission has a frequency deviation of 20 kHz.
 - (i) Determine the percent modulation of this signal if it is broadcasted in the 88- 98 MHz band (5 marks)
 - (ii) Calculate the percent modulation if this signal is broadcasted as the audio portion of a television broadcast. (5 marks)
- b) Describe any two applications of FM (4 marks)
- 7a) Write short note on Rayleigh fading (8 marks)
- 7b) Describe the three basic propagation mechanisms? (6 marks)