

Code: 17ECMC1T2

**I M.Tech-I Semester-Regular Examinations-February-2018**

**ADVANCED DIGITAL COMMUNICATIONS  
(MICROWAVE & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 60

Answer the following questions.

1.a) Describe the mathematical model, constellation diagram & block diagram of modulation and demodulation of a QPSK system. Also sketch the transmit waveform for the binary sequence 10110001. 10 M

b) Distinguish between FDMA, TDMA and CDMA schemes. 5 M

**(OR)**

2.a) What is the advantage of differentially encoded phase modulation schemes? Describe the differential encoding and decoding scheme with a neat block diagram. 7 M

b) What are the applications of TDMA? Also mention its limitations. 8 M

3.a) What is the advantage of spread spectrum signaling over TDMA & FDMA systems? 7 M

b) Describe the generation of binary pseudo-random sequences using linear feedback shift registers. 8 M

**(OR)**

4.a) Compare direct sequence and frequency hopping spread spectrum systems. 7 M

b) Describe the generation and properties of Gold sequences and mention their use in spread spectrum systems. 8 M

5.a) Describe the discrete-time model for a channel with ISI. 7 M

b) Compare linear and decision-feedback equalization schemes. 8 M

**(OR)**

6.a) Compare the performance of linear, decision-feedback, iterative equalization schemes. 7 M

b) Write short notes on adaptive linear equalizer with LMS algorithm. 8 M

7.a) Define the single-user hypothesis testing problem and derive the matched filter. 7 M

b) Write short notes on successive interference cancellation for multiuser detection. 8 M

**(OR)**

- 8.a) Derive the optimum receiver structure for single user detection. 7 M
- b) Describe and compare successive-interference and parallel-interference cancellation schemes for multiuser detection. 8 M