PVP 17

Code: **17ECMC1T2**

I M.Tech - I Semester – Regular / Supplementary Examinations
December 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 QAM system. Also sketch the transmit waveform for the binary sequence 10110001. 10 M

b) Mention the characteristics & advantages of FDMA systems. 5 M

(OR)

2.a) What is the need for modulation? Distinguish between baseband and passband modulation schemes. Mention applications of each. 7 M

b) Compare BPSK and BFSK modulation schemes with neat sketches of waveforms and constellation diagrams. 8 M

3.a) Draw the block diagram of a direct sequence spread spectrum system and explain its operation with neat sketches of waveforms and spectra of data and pseudo-noise signals. 7 M

b) What are maximal-length sequences? Describe their generation and properties. 8 M

(OR)

4.a) With a neat block diagram, describe the frequency hopping spread-spectrum systems. 7 M

b) Compare Gold and Kasami sequences and mention their properties. 8 M

5.a) What is the need for equalization? Describe the linear equalization method in detail. 7 M

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

(OR)

6.a) Compare the linear and decision-feedback equalization schemes. 7 M

b) What is the need for adaptive equalization? Describe the operation of adaptive linear equalizer? 8 M

7.a) Derive the optimum receiver structure for single user detection. 7 M

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

(OR)

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

b) Describe and compare successive-interference and parallel-interference cancellation schemes for multiuser detection. 8 M