

Code: ECMC1T3

**I M.Tech - I Semester - Regular Examinations – April 2015**

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

Duration: 3 hours

Marks: 5×14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Compare PSK, QPSK and DPSK. 7 M  
  
b) Draw the structure of a correlation receiver and explain its operation. 7 M
  
2. a) Draw the diagram for optimum receiver for an AWGN channel with ISI and explain. 7 M  
  
b) Draw the structure of decision feedback equalizer and explain. 7 M
  
3. a) Explain the adaptive decision feedback equalizer. 7 M  
  
b) Explain the steps involved in recursive Least Squares algorithm for adaptive equalization. 7 M
  
4. a) Draw the model of spread spectrum digital communication system and explain. 7 M

- b) Draw the block diagram of the transmitter and receiver for an FH spread spectrum system and explain. 7 M
5. a) Explain the statistical models for fading channels. 7 M
- b) Derive the probability of error of binary PSK when the signals are transmitted over a frequency-nonselective, slowly fading channel. 7 M
6. a) Draw and explain the optimum receiver structure. 7 M
- b) Discuss the performance analysis of multi-user detectors and interference cancellers. 7 M
7. a) Derive and explain probability of error for maximum likelihood decoding of convolutional codes. 7 M
- b) Explain Trellis coding with expanded signal sets for Band limited channels. 7 M
8. a) Explain the general principles of OFDM. 7 M
- b) Explain the concept of interleaving and channel diversity. 7 M