

**SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
JUNE 2009**

EC 04 604—DIGITAL COMMUNICATION

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

- I. (a) Explain the generation of PAM signal.
(b) Discuss what is granular noise ?
(c) What is meant by scrambling ? Explain.
(d) Define the following terms :
 (i) Norm. (ii) Inner product.
(e) Explain what is meant by threshold detection ?
(f) Explain maximum likelihood detector.
(g) What are the drawbacks of binary PSK signals.
(h) Compare the performance of FSK system with MSK system.

(8 × 5 = 40 marks)

Part B

- II. (a) (i) Draw the block diagram of TDM system and explain. (7 marks)
(ii) Explain the following formats with examples :
 (i) NRZ (ii) Manchester.

(8 marks)

Or

- (b) (i) Derive the signal to quantization noise ratio for PCM system. (10 marks)
(ii) What is differential encoding ? Explain. (5 marks)

- III. (a) Draw the block diagram of modified duo-binary signalling scheme and explain with and without precoder.

Or

- (b) (i) Define and explain the following terms :
 1 L^2 space.
 2 Inner product space.
 3 Normal space.

(9 marks)

- (ii) Explain the criteria for matched filter.

(6 marks)

Turn over

- IV. (a) Derive the optimum receiver for detecting known signals in the presence of additive non-white Gaussian noise.

Or

- (b) Explain about carrier and symbol synchronization techniques.

- V. (a) Explain the generation and detection of binary PSK signal with neat block diagrams and signal space diagram.

Or

- (b) (i) Derive the power spectral density and bandwidth of MSK signals. (8 marks)
(ii) Explain the continuant of phase in MSK signals. (7 marks)

[4 × 15 = 60 marks]