C 47606 (Pages 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2008

EC 04 604–DIGITIAL COMMUNICATION

(2004 admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

Part A

I. (a) Explain sampling theorem for band pass signal.

(b) Explain Manchester and differential enconding with an example.

(c) Explain geometric structure of the signal space.

(d) What is meant by scrambling ? Explain.

(e) Explain the draw backs of binary PSK system.

(f) Explain the generation of binary ASK signal.

(g) Explain what is matched filter.

(h) Describe about maximum likelihood detector.

(8 × 5 = 40 marks)

Part B

II. (a) (i) Draw the block diagram of TDM system and explain. (8 marks)

(ii) Draw the circuit for detecting PPM signal and explain. (7 marks)

Or

(b) (i) Draw the block diagram of adaptive delta modulation system and explain. (8 marks)

(ii) Explain the quantization noise in delta modulation system. (7 marks)

III. (a) Draw the block diagram of zero-forcing equalizer and explain.

Or

(b) (i) Explain Nyquist pulse shaping criterion for zero ISI. (7 marks)

(ii) Define and explain :

1 NORM.

2 Inner product.

3 Gram-Schmidt orthogonalization procedure.

(2 + 2 + 4 = 8 marks)

Turn over

IV. (a) (i) Derive the impulse response of the matched-fliter. (7 marks)

(b) (ii) Show that the output signal of a matched filter is proportional to a shifted version of the autocorrelation function of the input signal to which the filter is matched. (8 marks)

Or

(b) Explain carrier and symbol synchronization. (15 marks)

V. (a) Derive the expression for error probability of PSK system. (15 marks)

Or

(b) Draw the block diagram of binary FSK transmitter and receiver. Explain with signal space diagram. (15 marks)

[4 × 15 = 60 marks]