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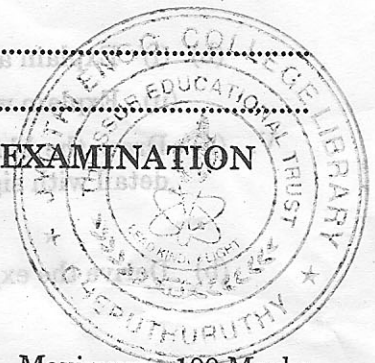
(Pages : 2)

Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2010

EC 04 604—DIGITAL COMMUNICATION
(2004 admissions)



Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

- I. (a) Explain sampling theorem for band pass signals.
(b) Define and explain the following formats with an example :
(i) Bipolar ; (ii) Manchester.
(c) State and explain Nyquist pulse shaping criterion for zero ISI.
(d) State Gram-Schmidt orthogonalization procedure.
(e) Define random process and Gaussian random process. State the properties of Gaussian random process.
(f) Explain about symbol synchronization.
(g) What is meant by coherent detection ? Explain.
(h) Explain the generation of binary ASK signals.

(8 × 5 = 40 marks)

Part B

- II. (a) Explain the generation and detection of PWM signals.
Or
(b) Draw the block diagram of PCM systems and explain in detail.
- III. (a) (i) Derive the time-domain and frequency-domain representation of duo-binary signal.
(ii) What is equalizer ? Explain the basic principle of equalization for digital communication .
Or
(b) Show that the SNR at the output of a matched filter is maximum when its impulse response is time shifted and time reversal of its input signal.
- IV. (a) (i) Derive the optimum receiver to detect the known signals in the presence of additive white Gaussian noise.
(ii) Derive the expression for probability of error of optimum receiver for AWGN channel.

Or

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- (b) (i) Explain about ML detector.
 - (ii) Explain what is meant by threshold detection.
- V. (a) Draw the block diagram of coherent binary FSK transmitter and receiver and explain in detail with signal space diagram.

Or

- (b) Derive the expression for bit error rate of binary PSK detector.

[4 × 15 = 60 marks]

Maximum : 100 Marks

Time : Three Hours

Answer all questions.

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- (b) Define and explain the following formats with an example : (i) Bipolar ; (ii) Manchester.
- (c) State and explain Nyquist pulse shaping criterion for zero ISI.
- (d) State Gram-Schmidt orthogonalization procedure.
- (e) Define random process and Gaussian random process. State the properties of Gaussian random process.
- (f) Explain about symbol synchronization.
- (g) What is meant by coherent detection ? Explain.
- (h) Explain the generation of binary ASK signals.

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Part B

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- (ii) What is equalizer ? Explain the basic principle of equalization for digital communication.
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Turn over