EE

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(Pages 2)

Name.....

Reg. No.....

FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2007

EE 04 501—ANALOG AND DIGITAL COMMUNICATION

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all *questions.*

Part A

I. (a) Find the spectrum of the signal given by :

$$x(t) = A, \quad |t| \leq T$$

$$= 0, \quad |t| > T$$

(b) Define Gaussion random process and state its properties.

(c) Derive the power relations for single-tone amplitude modulated wave.

(d) Explain the relationship between phase modulation and frequency modulation.

(e) Explain the generation of PAM signal.

(f) Explain ASK with constellation diagram.

(g) The probabilities of the 5 possible outcomes of an experiment are given as :

$$\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}, \frac{1}{16}.$$

Determine the entropy.

(h) Explain about circuit switching. (8 × 5 = 40 marks)

Part B

II. (a) (i) State and explain sampling theorem for low-pass band-limited signal. (7 marks)

(ii) State and prove convolution theorem. (8 marks)

Or

(b) State and prove Wiener Khinchin theorem for second order W.S.S. process. (15 marks)

III. (a) Draw the block diagram of AM transmitter and explain each block in detail.

Or

(b) Draw the circuit of Foster-Seley discriminator and explain with phasor diagram. (15 marks)

Turn over

IV. (a) Draw the block diagram of binary baseband transmission system and explain function of each block in detail with necessary derivation.

Or

(b) Derive the average probability of error of binary FSK system. (15 marks)

V. (a) (i) State and prove Shannon's source coding theorem. (8 marks)

(ii) Explain the principle of forward error correction technique. (7 marks)

Or

(b) Draw the block diagram of CDMA transmitter and receiver. Explain function of each block in detail. (15 marks)

[4 × 15 = 60 marks]