

**FIFTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION
DECEMBER 2006**

EE 2K 502/PT EE 2K 403—ANALOG AND DIGITAL COMMUNICATION SYSTEM

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

1. (a) Define : (i) Energy signals. (ii) Power signals.
- (b) State Nyquist sampling theorem.
- (c) Enumerate the methods of generation and detection of AM. Explain any one :
- (d) Define : 1 Modulation Index.
2 Frequency deviation.
- (e) Explain the characteristics of AWGN channel.
- (f) What is ISI ? What are the the methods to minimize ISI ?
- (g) State the characteristics of BSC. Derive expression for channel capacity.
- (h) Distinguish circuit switching from packet switching.

(8 × 5 = 40 marks)

- II. (a) (i) State and derive Wiener-Khinchin theorem.
(ii) Explain the characteristics of white noise.

Or

- (b) (i) State and derive conduction theorem.
(ii) Derive the propertie of Gaussian random processes.

- III. (a) Draw a neat block diagram of superheterodyne receiver. Explain its principle of operation. State its advantages.

Or

- (b) Explain the principle of operation of Foster-Seeley discriminator with a neat circuit diagram.

- IV. (a) Compare the properties and characteristics of all digital modulation schemes.

Or

- (b) (i) Derive an expression for impulse response of matched filter.
(ii) Differentiate scrambler from unscrambler.

- V. (a) (i) State and derive the properties of entropy.
(ii) Explain the principle of forward error correction with a neat block diagram.

Or

- (b) Write short notes on :
(i) Transmission Impairments.
(ii) DS-CDMA.

(4 × 15 = 60 marks)