B.Tech. (ECE) (ETE) (Sem. - 5th)

DIGITAL COMMUNICATION SYSTEM

SUBJECT CODE : BTEC-501 (2011 Batch)

Paper ID : [A2103]

Time : 03 Hours   Maximum Marks : 60

Instruction to Candidates:

1) Section - A is compulsory consisting of Ten questions carrying Two marks each.

2) Section - B contains Five questions carrying Five marks each and students has to attempt any Four questions.

3) Section - C contains three questions carrying Ten marks each and students has to attempt any Two questions.

Section - A

Q1)

a) What do you mean by Time division Multiplexing.

b) What are the advantages of digital communication systems over analog communication systems?

c) State the difference between coherent and non-coherent detection.

d) What is entropy?

e) Explain the purpose of signaling bit.

f) Define Shannon limit for information capacity?

g) What is the cause of slope overload error in delta modulation?

h) Draw the ASK spectrum.

i) Explain the principle of non-coherent FSK demodulator.

j) State the disadvantages of DPSK and PSK.

Section B

Q2) A signal having bandwidth equal to 3.5 KHz is sampled, quantized and coded by a PCM system. The coded signal is transmitted over a transmission channel of supporting a transmission rate of 50kbits/sec. Determine the maximum signal to noise ratio that can be obtained by this system. The input signal has peak to peak value of 4volts and rms value of 0.2V.

Q3) Write short note on codecs and combo chip.

Q4) How eye patterns are useful for studying intersymbol interference in digital communication system.

Q5) Determine the Huffman code for the following messages with their probabilities given 0.05, 0.15,0.2,0.05,0.15,0.3 and 0.1.

Q6) Describe M-ary modulation techniques. In what conditions M-ary signaling schemes are preferred over binary signaling schemes.

Section - C

Q7) a) Explain QPSK modulator, demodulator and bandwidth requirement for that.
   b) Explain DBPSK transmitter and receiver.

Q8) a) Explain how differential PCM improves system performance.
   b) Describe 8QAM transmitter with block diagram.

Q9) a) Explain Lampel-Ziv source coding algorithm.
   b) Write a note on matched filter receivers.

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