

4E1222

Roll No. _____

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B. Tech. IV - Sem. (Main) Exam., May - 2019
PCC Electronics & Communication Engineering
4EC4 – 07 Analog and Digital Communication
EC, EI

Time: 3 Hours

Maximum Marks: 120

Instructions to Candidates:

PART - A : Short answer questions (up to 25 words) 10×2 marks = 20 marks.

All ten questions are compulsory.

PART - B : Analytical/Problem Solving questions (up to 100 words) 5×8 marks = 40 marks.

Candidates have to answer five questions out of seven

PART - C : Descriptive/Analytical/Problem Solving questions 4×15 marks = 60 marks.

Candidates have to answer four questions out of five.

1. NIL

2. NIL

PART – A

Q.1 Differentiate between 'bit interleaving' and 'word interleaving'.

Q.2 What is quantization in PCM system?

Q.3 Write the important properties of line codes.

Q.4 What is sampling theorem?

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Q.5 Draw the circuit diagram of envelope detector.

Q.6 Sketch the signal constellation of QPSK modulation technique.

Q.7 What is the transmission rate of T1 carrier system?

Q.8 What is correlator?

Q.9 What is minimum shift keying?

Q.10 Discuss the advantages and disadvantages of pulse modulation as compared to continuous wave modulation.

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PART – B

Q.1 Sketch the frequency domain representation of DSB-SC and SSB- SC signals, draw and explain the principle of balance modulator.

Q.2 Determine the probabilities of errors of ASK, PSK and FSK systems and required bandwidth of each system.

Q.3 Determine the signal to quantization ratio of a delta modulator for a sinusoid signal with a bit rate of 64 kbps and input signal bandwidth of 4 kHz.

Q.4 Explain with the help of block diagrams working of QPSK transmitter and receiver.

Q.5 Draw the block diagram of ADM and explain its working and compare with PCM.

Q.6 Explain the terms slope overload and granular noise in Delta Modulation.

Q.7 Explain optimum filter and matched filter.

PART – C

Q.1 What is Inter symbol interference? Explain the causes, effect and remedies to reduce the ISI in communication systems. Why does raised cosine spectrum provide a means for zero ISI?

Q.2 Draw the block diagram of phasing/Third method of generation of SSB-SC signals and detection of SSB-SC signals and briefly explain it. Also write the applications of SSB-SC.

- Q.3 Discuss the performance of AM and FM systems in presence of noise. Why pre emphasis and de-emphasis are required? Also discuss the threshold effect in angle modulation.
- Q.4 What do you mean by companding in PCM system? Why it is required? What are μ -law and A-law of companding?
- Q.5 A television signal having a BW of 4.2 MHz is transmitted using binary PCM system. Given that quantization levels are 512. Determine:
- Code word length
 - Transmission BW
 - Final bit rate
 - O/P signal to quantization ratio.

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