

B.Tech II Year II Semester (R13) Supplementary Examinations May/June 2017

PRINCIPLES OF COMMUNICATIONS
(Electronics and Instrumentation Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- Define radio communication and mention types.
 - What is impulse noise? Write some sources of it.
 - SSB is suitable for speech signals and not for video signals. Why?
 - Compare Wideband FM and Narrowband FM.
 - What do you mean by sampling period and nyquist rate?
 - What is meant by pulse duration and pulse position modulation?
 - Illustrate the slope overload and granular noise in Delta modulation and how can these are avoided.
 - Draw the block diagram of coherent receiver and mention disadvantages.
 - Define the terms information and entropy.
 - What is convolutional code? How is it different from block codes?

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

- 2 Draw the basic block diagram of electrical communication system and explain function of each block.
- OR
- 3 Define the types of noises and explain any two in detail.

UNIT – II

- 4 Explain the generation of SSB-SC signal in detail.
- OR
- 5 Describe the frequency and phase modulations mathematically and perform comparison.

UNIT – III

- 6 State and prove the sampling theorem. For band limited signals in time domain.
- OR
- 7 Explain the time division multiplexing with neat block diagram and write the need of asynchronous multiplexing.

UNIT – IV

- 8 State in your own words the principle of quantization and obtain the expression for the signal to quantization noise for the case of a uniform quantizer.
- OR

- 9 What is the principle of DPSK? Explain DPSK scheme at the transmitter and receiver with example.

UNIT – V

- 10 A discrete memory less source has an alphabet of seven symbols whose probabilities of occurrence are given below:

Symbol	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Probability	0.25	0.25	0.125	0.125	0.125	0.0625	0.0625

Compute two different Huffman codes for this alphabet. In one case, move a combined symbol in the coding procedure as high as possible, and in second case, move it as low as possible. Find the variance of average code-word length over the ensemble of letters.

OR

- 11 What is block code? The generator matrix of a (6, 3) block code is given below. Find all code vectors and Write the parity check matrix H.

$$G = [1 \ 0 \ 0 \ 0 \ 1 \ 1]$$

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