Code: 13A04409 **R13**

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)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Define radio communication and mention types.
(b) What is impulse noise? Write some sources of it.
(c) SSB is suitable for speech signals and not for video signals. Why?
(d) Compare Wideband FM and Narrowband FM.
(e) What do you mean by sampling period and nyquist rate?
(f) What is meant by pulse duration and pulse position modulation?
(g) Illustrate the slope overload and granular noise in Delta modulation and how can these are avoided.
(h) Draw the block diagram of coherent receiver and mention disadvantages.
(i) Define the terms information and entropy.
(j) 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.

$G = |1\ 0\ 0\ 0\ 1\ 1|$
$G = |0\ 1\ 0\ 1\ 0\ 1|$
$G = |0\ 0\ 1\ 1\ 1\ 0|$

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