Code: 15A04410 **R15**

B.Tech II Year II Semester (R15) Supplementary Examinations December 2018

PRINCIPLES OF COMMUNICATION

(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 white noise.

(b) A receiver connected to an antenna has a noise figure of 1.6. Calculate the equivalent noise temperature of the receiver if the ambient temperature is 290 K.

(c) Distinguish between narrowband and wideband FM.

(d) Calculate the percentage power saving when the carrier and one of the sidebands are suppressed in an AM wave modulated to a depth of 50%.

(e) Mention the advantages of PPM over PWM.

(f) What is meant by aliasing?

(g) Write the principle of ADM.

(h) Give any two advantages of digital communication.

(i) What is the entropy of a digital source emitting 0 and 1 with equal probabilities?

(j) Define systematic codes.

PART – B

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

UNIT – I

2 (a) Describe the electrical communication system with a block diagram.

(b) Explain the shot noise and resistor noise with necessary expressions.

OR

3 (a) Explain the noise figure in terms of available power gain and S/N ratio.

(b) Write a short note on noise in reactive circuits.

UNIT – II

4 Draw and explain one method each for generating DSB-SC and SSB-SC.

OR

5 (a) Discuss the demodulation of DSB-SC with a neat diagram.

(b) Explain the principle of angle modulation and compare FM with PM.

UNIT – III

6 Discuss the demodulation of PAM and PPM signals.

OR

7 Explain time division and frequency division multiplexing techniques with neat diagrams.

UNIT – IV

8 Explain the concept of pulse coded modulation with a neat block diagram.

OR

9 Draw and explain the coherent QPSK transmitter and receiver.

UNIT – V

10 A source emits the symbols S_0 , S_1 , S_2 , S_3 , S_4 , and S_5 with probabilities of 0.4, 0.2, 0.1, 0.1, 0.1 and 0.1 respectively. Construct the Shannon Fano code for this source and obtain the code efficiency.

OR

11 Describe the generation of linear blocks codes and discuss the differences between block and convolutional codes.