

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

**ANALOG COMMUNICATION SYSTEMS**

(Electronics and Communication 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) What is the need for modulation?
  - (b) Define amplitude modulation.
  - (c) Compare WBFM and NBFM.
  - (d) Define phase modulation.
  - (e) What is white noise?
  - (f) Define noise equivalent bandwidth.
  - (g) State sampling theorem.
  - (h) Draw the PPM waveforms.
  - (i) Define Shannon's channel coding theorem.
  - (j) Summarize the properties of entropy.

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

**UNIT – I**

- 2 Explain envelope detector with neat block diagram. Analyze when negative peak clipping takes place in envelope detector.

**OR**

- 3 Explain super heterodyne AM receiver with a neat block diagram.

**UNIT – II**

- 4 Draw and explain block diagram of Armstrong indirect FM transmitter.

**OR**

- 5 Describe the concept of Preemphasis and Deemphasis in FM broadcasting.

**UNIT – III**

- 6 Explain noise in DSB and SSB systems.

**OR**

- 7 Write short notes on:

- (a) Signal to noise ratio.
- (b) Probability of error.
- (c) Noise equivalent bandwidth.
- (d) Noise figure.

**UNIT – IV**

- 8 Explain Pulse amplitude modulation in detail.

**OR**

- 9 Write short notes on:

- (a) Natural and flat top sampling.
- (b) Radio receiver measurements.

Contd. in page 2

**UNIT - V**

- 10 (a) A source emits an independent sequence of symbols from a alphabet consists of five symbols A, B, C, D and E with symbol probabilities  $\frac{1}{4}, \frac{1}{8}, \frac{1}{8}, \frac{3}{16}$  and  $\frac{5}{16}$  respectively .Find the entropy of the source.
- (b) The output of an information source consists of 128 symbols, 16 of which occur with a probability of  $\frac{1}{32}$  and the remaining 112 occur with a probability of  $\frac{1}{224}$ . The source emits 1000 symbols/sec. Assuming that the symbols are chosen independently. Find the average information rate of this source.

**OR**

- 11 Discuss about:
- (a) Rate of information over a discrete channels
- (b) Capacity of discrete memory less channels.

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