

R05

Code No: R05220503

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B.Tech II Year II Semester Examinations, November / December-2013

PRINCIPLES OF COMMUNICATIONS

(Common to CSE, IT, ECOMPE)

Time: 3 hours

Max. Marks: 80

**Answer any five questions
All questions carry equal marks**

- 1.a) Define
 - i) Autocorrelation function
 - ii) Cross correlation
 - iii) Power spectral density
- b) Write the properties autocorrelation function. [8+8]
- 2.a) Compare AM with DSB-SC.
- b) An amplitude modulated waveform has the form
$$y(t)=10(1+0.6 \cos 2\pi 600t) \cos 2\pi 1000t$$
 - i) Find the total power, the side band power, and power efficiency.
 - ii) What is the modulation index? [16]
- 3.a) Describe the Indirect Method of producing the frequency modulation and mention the advantages and disadvantages.
- b) Compare frequency modulation with phase modulation. [8+8]
- 4.a) State and prove sampling theorem in time domain.
- b) Explain in detail about TDM system? [8+8]
- 5.a) Discuss the classification of quantization process.
- b) Derive an expression for quantization noise power in terms of Step size. [8+8]
- 6.a) Explain the generation and detection of DPSK.
- b) Discuss the advantages and disadvantages of DPSK. [8+8]
- 7.a) Explain the Huffman coding with an example.
- b) A discrete source transmits six messages with probabilities 0.1, 0.2, 0.25, 0.15, 0.28 and 0.02 respectively. Find the optimum source coding scheme for the above source. Find the coding efficiency and the Code Redundancy. [10+6]
- 8.a) What is coding in a communication?
- b) Classify the coding techniques.
- c) Explain about hamming code with example. [3+6+7]
