Roll No .....

CS/EE/IT - 405

B.E. IV Semester

Examination, December 2015

Analog and Digital Communication

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each questions are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) For the base band signal m(t) = 2cos1000t+cos2000t, sketch the spectrum of m(t).
   b) What do you understand by causal and non-causal system?
   c) Write and explain Parseval's theorem.
   d) Write the difference between frequency domain and time domain representation of signals. Use suitable examples.

   OR

   What do you understand by impulse response of a system? Differentiate between cross-correlation and autocorrelation.

2. a) Why modulation is needed for the transmission of the signals?
   b) What are the merits of frequency modulation?
   c) Explain NBFM and WBFM in brief.
   d) Compare the following amplitude modulation system DSB with carrier, DSB/SC, SSB/SC and VSB.

   OR

   What is phase modulation? How it is related to frequency modulation. Show that a vector can be used to generate a FM signal.

3. a) Write and explain sampling theorem.
   b) What is multiplexing? Why it is needed?
   c) Explain the terms quantization process, quantization error and noise figure .
   d) Differentiate between the delta modulation and adaptive delta modulation techniques. Explain the importance of companding.

   OR

   Define and describe Pulse Position Modulation (PPM) and explain how PPM is derived from Pulse Width Modulation (PWM).

4. a) What do you understand by digital modulation techniques?
   b) What are functions of a repeater in a PCM system?
   c) Draw the following data formats for the bit stream 11001011 polar NRZ, polar RZ, unipolar RZ, AMI, Manchester.
   d) What are the advantages of DPSK? The bit stream of 11100110001 is to be transmitted using DPSK, determine the encoded sequence and transmitted phase sequence and find out the defected output.

   OR

   Draw the block diagram of QPSK system and explain its working. Compare the bandwidth of QPSK system with that of BPSK system.

5. a) Describe minimum Hamming distance in brief.
   b) Write and explain Shannon theorem.
   c) Does Shannon-Hartley theorem tells about trade off between signal to noise ratio and bandwidth? Explain.
   d) Write and explain Shannon-Fano coding method using suitable example.

   OR

   Write short note on Linear block codes, cyclic codes.

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