Code :RR311204

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III B.Tech I Semester(RR) Supplementary Examinations, May 2011
COMMUNICATION THEORY
(Information Technology)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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1. (a) Define an impulse function. Give various methods of representing it.

   (b) Discuss the response of a linear system.

2. If v(t)= sinωot,

   (a) Find R(τ)

   (b) If G(f)=F[R(τ)],find G(f) directly and compare.

3. (a) Describe principle of VSB transmission. What are its advantages over SSB.

   (b) Explain the working of phase-shift method of suppressing the unwanted side band.

4. (a) Compare AM and FM and bring out the advantages of FM over AM.

   (b) When the modulating frequency in an FM system is 400 Hz and the modulating voltage is 2.4 V, the modulation index is 60, calculate the maximum deviation. What is the modulation index when the modulation frequency is reduced to 250 Hz and modulation voltage is simultaneously raised to 3.2 volts?

5. (a) Give the block diagram of DM and explain clearly the procedure for generation and demodulation of delta modulated signals.

   (b) What are the various types of errors occur in delta modulation? Explain how they can be minimized.

6. (a) Define nyquist rate of sampling and derive the expression for it.

   (b) A bandpass signal has a center frequency f_o and extends from (f_o-5) KHz to (f_o+5) KHz. If the sampling rate 25 KHz, find the range of center frequency for which the sampling satisfies nyquist rate.

7. A discrete memoryless source transmits 8 messages m_1, m_2, m_3,.... m_8 with probabilities of 1/2, 1/8, 1/8, 1/16, 1/16, 1/16, 1/32, 1/32 respectively. Evaluate the channel capacity and coding efficiency using appropriate Shannon-Fano Coding. Explain the principles involved, and define the terms used.

8. (a) Find a Generator polynomial g(x) for a (7,4) cyclic code. Find code vector for the vector for the data vectors 1010,1111,0001 and 1000.

   (b) Clearly explain the necessity for coding and the requirements for error detecting and error correcting codes. Hence define Hamming distance.

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