Code :R5321004

R5

III B.Tech II Semester(R05) Supplementary Examinations, April/May 2011
PRINCIPLES OF COMMUNICATION
(Electronics & Instrumentation Engineering, Instrumentation & Control Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. (a) Discuss the types of signals in communication.
   (b) What does modulation actually do to a message and carrier?
2. Define amplitude modulation. The rms value of a radio frequency voltage is 200 volts before modulation. When it is modulated by a sinusoidal audio frequency voltage, its rms voltage becomes 242 volts. Calculate the modulation index.
3. An FM radio link has a frequency deviation of 30 kHz. The modulating frequency is 3 kHz. Calculate the bandwidth needed for the link. What will be the bandwidth if the deviation is reduced to 15 kHz?
4. State and prove the sampling theorem (frequency domain).
5. With reference to PCM system, explain the following:
   (a) Quantization error
   (b) companding
   (c) encoder
   (d) decoder.
6. (a) Explain DPSK modulator and DPSK demodulator with block diagram and differential encoding and decoding tables.
   (b) Distinguish between ASK and PSK modulation systems.
7. (a) Consider a telegraph source having two symbols, dot and dash. The dot duration is 0.2s. The dash duration is 3 times the dot duration. The probability of the dot's occurring is twice that of the dash, and the time between symbols is 0.2s. Calculate the information rate of the telegraph source.
   (b) A system has band width of 4Khz and SNR of 28 db at the input of the receiver. Calculate
      i. It's information carrying capacity
      ii. The capacity of channel if it's bandwidth is double while the transmitted signal power remains constant.
8. Explain the procedure for calculating syndrome, error detection and correction for a binary cyclic code.

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