Code No: R05310404 | **R05** | **Set No. 2**

III B.Tech I Semester Examinations,November 2010
DIGITAL COMMUNICATIONS
Common to Electronics And Telematics, Electronics And Communication
Engineering
Time: 3 hours | Max Marks: 80
Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Mention the drawbacks in duo - binary coding and how these drawbacks can be overcome by using modified duo - binary coding.

   (b) Derive an expression for error probability of modified duo - binary PAM system. [8+8]

2. Draw and explain the State diagram of conventional encoder shown in figure 2 with rate=1/2, L=3. [16]
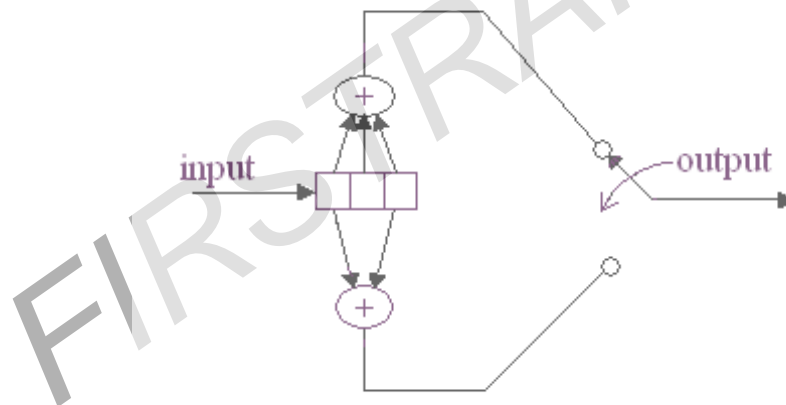

Figure 2

3. Write short notes on the following:

   (a) Mutual Information.

   (b) Self Information.

   (c) Logarithmic measure for information. [16]

4. The threshold value of the input signal power to noise ratio $(S/N)_i$ in PCM system is defined as the value of $(S/N)_i$ for which the value of (S/N)o is 1dB below its maximum.

   (a) Show that the threshold occurs when $P_e \approx 1/[16(2^{2N})]$.

   (b) Plot P_e Versus N, for N = 2, 4, 6 and 8.

   (c) Sketch the threshold values of $(S/N)_i$ Versus N for which N = 2, 4, 6 and 8 (Assume that a PSK signaling scheme is used) [6+5+5]

1

5. (a) Compare Delta modulation and PCM techniques in terms of bandwidth and signal to noise ratio.

   (b) A signal m(t) is to be encoded using either Delta modulation or PCM technique. The signal to quantization noise ratio $(S_O/N_O) \geq 30$dB. Find the ratio bandwidth required for PCM to Delta Modulation.   [8+8]

6. Explain about block codes in which each block of k message bits encoded into block of n>k bits with an example.   [16]

7. (a) What are the various characteristics of Ideal system? Explain.

   (b) Does an Ideal system proposed by Shannon can be implemented in practice? Justify.   [16]

8. (a) Assume that 4800bits/sec. random data are sent over a band pass channel by BFSK signaling scheme. Find the transmission bandwidth B_T such that the spectral envelope is down at least 35dB outside this band.

   (b) Write the comparisons among ASK, PSK, FSK and DPSK.   [8+8]

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2

Code No: R05310404   **R05**   **Set No. 4**

III B.Tech I Semester Examinations,November 2010
DIGITAL COMMUNICATIONS
Common to Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. Write short notes on the following:

   (a) Mutual Information.

   (b) Self Information.

   (c) Logarithmic measure for information.   [16]

2. Draw and explain the State diagram of conventional encoder shown in figure 2 with rate=1/2, L=3.   [16]
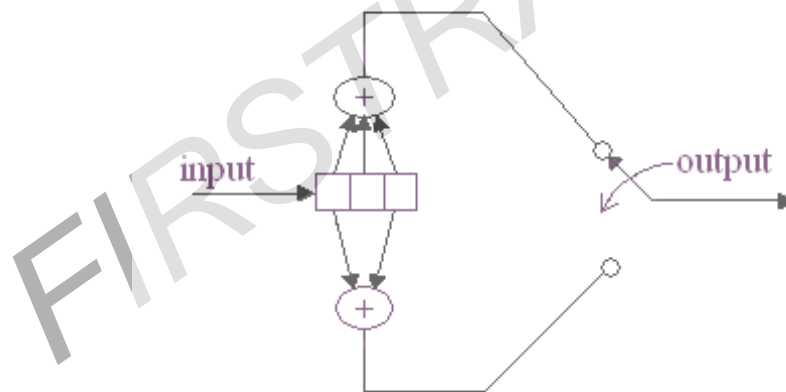

Figure 2

3. (a) What are the various characteristics of Ideal system? Explain.

   (b) Does an Ideal system proposed by Shannon can be implemented in practice? Justify.   [16]

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   (b) A signal m(t) is to be encoded using either Delta modulation or PCM technique. The signal to quantization noise ratio $(S_O/N_O) \geq 30$dB. Find the ratio bandwidth required for PCM to Delta Modulation.   [8+8]

5. Explain about block codes in which each block of k message bits encoded into block of n>k bits with an example.   [16]

3

6. (a) Mention the drawbacks in duo - binary coding and how these drawbacks can be overcome by using modified duo - binary coding.

   (b) Derive an expression for error probability of modified duo - binary PAM system. [8+8]

7. (a) Assume that 4800bits/sec. random data are sent over a band pass channel by BFSK signaling scheme. Find the transmission bandwidth B_T such that the spectral envelope is down at least 35dB outside this band.

   (b) Write the comparisons among ASK, PSK, FSK and DPSK. [8+8]

8. The threshold value of the input signal power to noise ratio $(S/N)_i$ in PCM system is defined as the value of $(S/N)_i$ for which the value of (S/N)o is 1dB below its maximum.

   (a) Show that the threshold occurs when $P_e \approx 1/[16(2^{2N})]$.

   (b) Plot P_e Versus N, for N = 2, 4, 6 and 8.

   (c) Sketch the threshold values of $(S/N)_i$ Versus N for which N = 2, 4, 6 and 8 (Assume that a PSK signaling scheme is used) [6+5+5]

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Code No: R05310404 | R05 | Set No. 1

III B.Tech I Semester Examinations,November 2010
DIGITAL COMMUNICATIONS
Common to Electronics And Telematics, Electronics And Communication
Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

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   (b) Write the comparisons among ASK, PSK, FSK and DPSK.   [8+8]

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   (c) Sketch the threshold values of $(S/N)_i$ Versus N for which N = 2, 4, 6 and 8 (Assume that a PSK signaling scheme is used)   [6+5+5]

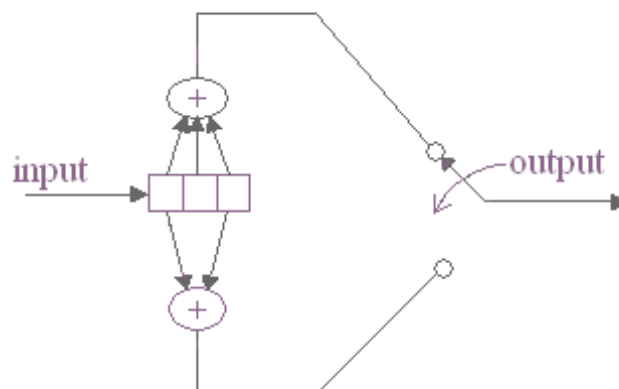4. Draw and explain the State diagram of conventional encoder shown in figure 2 with rate=1/2, L=3.   [16]

Figure 2

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   (a) Mutual Information.

    (b) Self Information.

    (c) Logarithmic measure for information. [16]

6. (a) Compare Delta modulation and PCM techniques in terms of bandwidth and signal to noise ratio.

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Code No: **R05310404** $\boxed{\textbf{R05}}$ $\boxed{\textbf{Set No. 3}}$

III B.Tech I Semester Examinations,November 2010
DIGITAL COMMUNICATIONS
Common to Electronics And Telematics, Electronics And Communication Engineering

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

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) What are the various characteristics of Ideal system? Explain.

   (b) Does an Ideal system proposed by Shannon can be implemented in practice? Justify.   [16]

2. Draw and explain the State diagram of conventional encoder shown in figure 2 with rate=1/2, L=3.   [16]
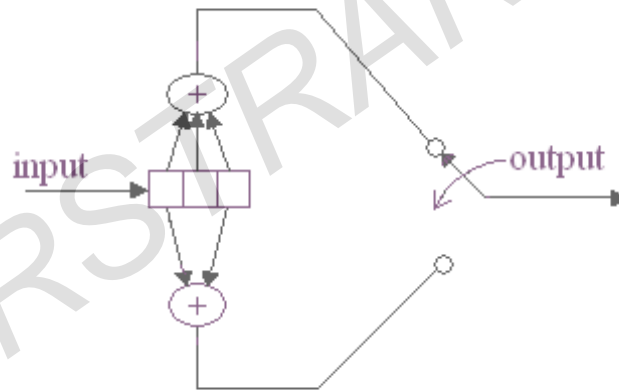

Figure 2

3. (a) Mention the drawbacks in duo - binary coding and how these drawbacks can be overcome by using modified duo - binary coding.

   (b) Derive an expression for error probability of modified duo - binary PAM system.   [8+8]

4. The threshold value of the input signal power to noise ratio $(S/N)_i$ in PCM system is defined as the value of $(S/N)_i$ for which the value of (S/N)o is 1dB below its maximum.

   (a) Show that the threshold occurs when $P_e \approx 1/[16(2^{2N})]$.

   (b) Plot P_e Versus N, for N = 2, 4, 6 and 8.

   (c) Sketch the threshold values of $(S/N)_i$ Versus N for which N = 2, 4, 6 and 8 (Assume that a PSK signaling scheme is used)   [6+5+5]

7

5. (a) Assume that 4800bits/sec. random data are sent over a band pass channel by BFSK signaling scheme. Find the transmission bandwidth B_T such that the spectral envelope is down at least 35dB outside this band.

   (b) Write the comparisons among ASK, PSK, FSK and DPSK. [8+8]

6. Write short notes on the following:

   (a) Mutual Information.

   (b) Self Information.

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