Code No: 07A4EC17 **R07** **Set No. 2**

II B.Tech II Semester Examinations,April/May 2012
PRINCIPLES OF COMMUNICATIONS
Common to Bio-Medical Engineering, Electronics And Computer Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) What do you understand by PCM? How quantizing and coding are done?
   (b) What is aliasing effect and aperture effect? How these effects can be overcome? [8+8]

2. (a) Let C be a (7, 4) cyclic code with g(x) =1+x+x^3. Find a generator matrix G for C and find the code word for d = (1010).
   (b) Consider the convolutional encoder shown in Figure 1b

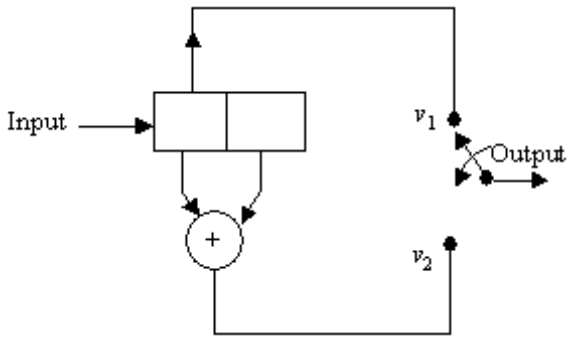

Figure 1b

   i. Find the impulse response of the encoder
   ii. Using the impulse response, determine the output code word for input data d= (101). [8+8]

3. Explain the cross-talk in PAM due to the HF and LF limitations of the channel. Which one of the two affects more than one channel and why? [16]

4. (a) Compare ASK, FSK and PSK systems with respect to bandwidth, power used, and equipment complexity.
   (b) Draw the block diagram of FSK transmitter and explain. [9+7]

5. Find the Fourier transform of a single sided exponential function e^{-bt} u(t) and draw the spectrum. Where u(t) is the unit step function. [16]

6. A DMS X has five symbols x_1, x_2, x_3, x_4 and x_5 with respective probabilities 0.2, 0.15, 0.05, 0.1, and 0.5. Construct a shannon-Fano code and a Huffman code for X and compare their code efficiencies. [16]

7. Derive the spectrum of narrowband angle modulation(NBFM). [16]

8. Explain the generation of modulator systems listed below in DSB-SC
   (a) Chopper - type(switching) modulator
   (b) Chopper - type (Ring modulator). [8+8]

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Code No: 07A4EC17 **R07** **Set No. 4**

II B.Tech II Semester Examinations,April/May 2012
PRINCIPLES OF COMMUNICATIONS
Common to Bio-Medical Engineering, Electronics And Computer Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. Find the Fourier transform of a single sided exponential function e^{-bt} u(t) and draw the spectrum. Where u(t) is the unit step function. [16]

2. (a) Let C be a (7, 4) cyclic code with g(x) =1+x+x^3. Find a generator matrix G for C and find the code word for d = (1010).
   (b) Consider the convolutional encoder shown in Figure 1b

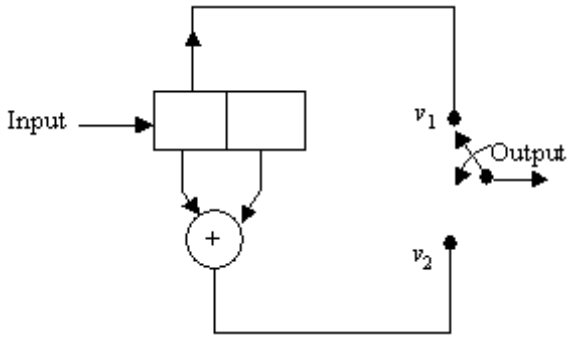

Figure 1b

   i. Find the impulse response of the encoder
   ii. Using the impulse response, determine the output code word for input data d= (101). [8+8]

3. Explain the generation of modulator systems listed below in DSB-SC
   (a) Chopper - type(switching) modulator
   (b) Chopper - type (Ring modulator). [8+8]

4. A DMS X has five symbols x_1, x_2, x_3, x_4 and x_5 with respective probabilities 0.2, 0.15, 0.05, 0.1, and 0.5 Construct a shannon-Fano code and a Huffman code for X and compare their code efficiencies. [16]

5. (a) Compare ASK, FSK and PSK systems with respect to bandwidth, power used, and equipment complexity.
   (b) Draw the block diagram of FSK transmitter and explain. [9+7]

6. Explain the cross-talk in PAM due to the HF and LF limitations of the channel. Which one of the two affects more than one channel and why? [16]

7. (a) What do you understand by PCM? How quantizing and coding are done?

(b) What is aliasing effect and aperture effect? How these effects can be overcome? [8+8]

8. Derive the spectrum of narrowband angle modulation(NBFM). [16]

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Code No: 07A4EC17 **R07** **Set No. 1**

II B.Tech II Semester Examinations,April/May 2012
PRINCIPLES OF COMMUNICATIONS
Common to Bio-Medical Engineering, Electronics And Computer Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Let C be a (7, 4) cyclic code with g(x) =1+x+x^3. Find a generator matrix G for C and find the code word for d = (1010).
   (b) Consider the convolutional encoder shown in Figure 1b

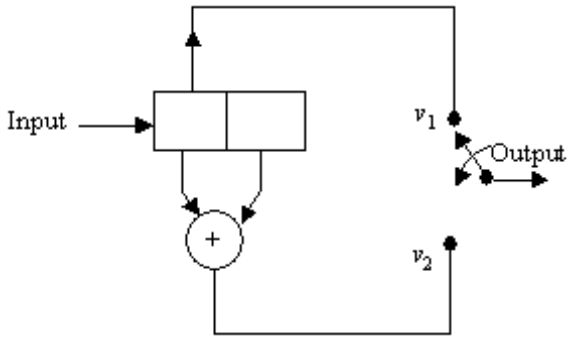

Figure 1b

   i. Find the impulse response of the encoder
   ii. Using the impulse response, determine the output code word for input data d= (101). [8+8]

2. Explain the cross-talk in PAM due to the HF and LF limitations of the channel. Which one of the two affects more than one channel and why? [16]

3. (a) Compare ASK, FSK and PSK systems with respect to bandwidth, power used, and equipment complexity.
   (b) Draw the block diagram of FSK transmitter and explain. [9+7]

4. Find the Fourier transform of a single sided exponential function e^{-bt} u(t) and draw the spectrum. Where u(t) is the unit step function. [16]

5. (a) What do you understand by PCM? How quantizing and coding are done?
   (b) What is aliasing effect and aperture effect? How these effects can be overcome? [8+8]

6. Derive the spectrum of narrowband angle modulation(NBFM). [16]

7. A DMS X has five symbols x_1, x_2, x_3, x_4 and x_5 with respective probabilities 0.2, 0.15, 0.05, 0.1, and 0.5. Construct a shannon-Fano code and a Huffman code for X and compare their code efficiencies. [16]

8. Explain the generation of modulator systems listed below in DSB-SC
   (a) Chopper - type(switching) modulator
   (b) Chopper - type (Ring modulator). [8+8]

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Code No: 07A4EC17 **R07** **Set No. 3**

II B.Tech II Semester Examinations,April/May 2012
PRINCIPLES OF COMMUNICATIONS
Common to Bio-Medical Engineering, Electronics And Computer Engineering

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Let C be a (7, 4) cyclic code with g(x) =1+x+x^3. Find a generator matrix G for C and find the code word for d = (1010).
   (b) Consider the convolutional encoder shown in Figure 1b

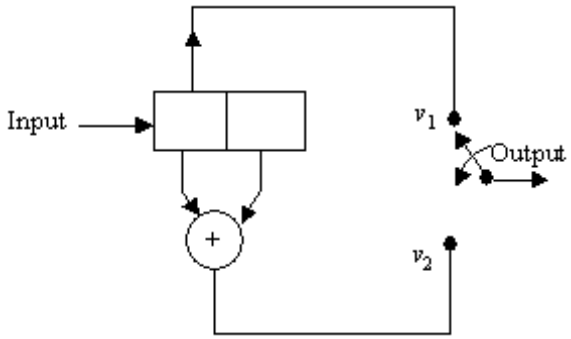

Figure 1b

   i. Find the impulse response of the encoder
   ii. Using the impulse response, determine the output code word for input data d= (101). [8+8]

2. Find the Fourier transform of a single sided exponential function e^{-bt} u(t) and draw the spectrum. Where u(t) is the unit step function. [16]

3. (a) Compare ASK, FSK and PSK systems with respect to bandwidth, power used, and equipment complexity.
   (b) Draw the block diagram of FSK transmitter and explain. [9+7]

4. A DMS X has five symbols x_1, x_2, x_3, x_4 and x_5 with respective probabilities 0.2, 0.15, 0.05, 0.1, and 0.5. Construct a shannon-Fano code and a Huffman code for X and compare their code efficiencies. [16]

5. (a) What do you understand by PCM? How quantizing and coding are done?
   (b) What is aliasing effect and aperture effect? How these effects can be overcome? [8+8]

6. Explain the cross-talk in PAM due to the HF and LF limitations of the channel. Which one of the two affects more than one channel and why? [16]

7. Derive the spectrum of narrowband angle modulation(NBFM). [16]

8. Explain the generation of modulator systems listed below in DSB-SC
   (a) Chopper - type(switching) modulator
   (b) Chopper - type (Ring modulator). [8+8]

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