Assignment-2

The due date for submitting this assignment has passed. Due on 2016-03-29, 23:55 IST.

Submitted assignment

Assignment for Week-2

1) The number of states for rate $R = \frac{1}{2}$ convolution code with $G(D) = \left[ \frac{1}{1+D+D^2+D^3} \right]$ is $1 point$

- 3
- 4
- 8
- None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers: 4

2) State diagram of convolutional encoders are shown below. Which of the following represents a catastrophic encoder?

[Diagram of state transitions for convolutional encoders]

[Diagram with state transitions labeled with inputs and outputs, showing state transitions for each input combination]
3) Given a rate $R = \frac{1}{n}$ convolutional code, which realization will always result in minimal encoder realization.

- Controller canonical form realization
- Observer canonical form realization
- Both of the above
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
- Controller canonical form realization

4) Equivalent systematic generator matrix for rate $R = \frac{2}{3}$ convolution code with

$$G(D) = \begin{bmatrix} 1 & 1 & 1 + D \\ 0 & D & 1 + D^2 \end{bmatrix}$$

- $\begin{bmatrix} 1 & 0 & 1 + D \\ 0 & 1 & 1 + D^2 \end{bmatrix}$
- $\begin{bmatrix} 1 & 1 & 1 \\ 0 & D & 1 + D \end{bmatrix}$
- $\begin{bmatrix} 1 & 0 & \frac{1+D}{D} \\ 0 & 1 & \frac{1+D^2}{D} \end{bmatrix}$
- $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 1 + D \end{bmatrix}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
- $\begin{bmatrix} 1 & 0 & \frac{1+D}{D} \\ 0 & 1 & \frac{1+p^2}{D} \end{bmatrix}$

5)
Equivalent systematic generator matrix of a rate $R = \frac{2}{3}$ convolutional encoder with

$$G(D) = \begin{bmatrix} 1 & 1 & 1+D \\ 0 & D & 1+D^2 \end{bmatrix}$$

can be realized using
- Controller canonical form realizer
- Observer canonical form realizer
- Both of the above
- Can not be realized

No, the answer is incorrect.
Score: 0

Accepted Answers:
Can not be realized

This is an example of
- Systematic feedback encoder
- Non-systematic feedback encoder
- Systematic feed forward encoder
- Non-systematic feed forward encoder

No, the answer is incorrect.
Score: 0

Accepted Answers:
Non-systematic feedback encoder

7) Weight enumerating function (WEF) of a $(2,1,2)$ convolutional code with

$$G(D) = \begin{bmatrix} 1 & 1 + D^2 \end{bmatrix}$$

is given by

- $X^3-X^4+X^6$
- $X^3+X^4-X^5$
- $X^3-X^4+X^5$
- $X^3-X^4+X^6$

None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:

8) Input output weight enumeration function (IOWEF) of a $(2,1,2)$ convolutional code with

$$G(D) = \begin{bmatrix} 1 & 1 + D^2 \end{bmatrix}$$

is given by

$X$: weight of $k$ input bits
$Y$: weight of $n$ coded bits
$Z$: label of each branch

- $XY^2Z^3+X^2Y^2Z^4+X^2Y^4Z^4$
- $1+XY^2Z^2+X^2YZ+X^2Y^2Z^2-XY^2Z^2$
- $XY^2Z^3+X^2Y^2Z^4-X^2Y^4Z^4$
- $1+XY^2Z^2-XYZ+X^2Y^2Z^2+X^2Y^2Z^4$
9) Decoding convolutional code using Viterbi algorithm will minimize

- Bit error rate for convolutional codes
- Frame error rate for convolutional codes
- Both of the above
- None of the above

**No, the answer is incorrect.**

Score: 0

**Accepted Answers:**

- Frame error rate for convolutional codes

10) BCJR algorithm will minimize

- Bit error rate for convolutional codes
- Frame error rate for convolutional codes
- Both of the above
- None of the above

**No, the answer is incorrect.**

Score: 0

**Accepted Answers:**

- Bit error rate for convolutional codes