Assignment 1

The due date for submitting this assignment has passed. **Due on 2016-03-24, 23:55 IST.**

Submitted assignment

Covers the theory based on first week lectures

1) Which of the following is an example of source coding? 

- Huffman code 
- Repetition code 
- Parity check code 
- None of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

- **Huffman code**

2) If an information source emits "1" and "0" with equal probability and the bit is transmitted through BSC, what is the probability of received sequence '01'? 

![Trellis Diagram](https://onlinecourses.nptel.ac.in/noc16_ec04/unit?unit=6&assessment=17)

- 0.125 
- 0.25 
- 0.5 
- 1

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

- **0.25**

3) A repetition code of length 7 has 

- 5 codewords 
- 7 codewords 
- 2 codewords 
- None of the above

**1 point**
4) 1/3 repetition code is able to
   - detect single error
   - detect double error
   - correct single error
   - All of above
   
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   2 codewords

5) For (2,1,3) convolutional code, the generator sequences are given as
   \( g^{(0)} = (1 \ 1 \ 0 \ 1) \), \( g^{(1)} = (1 \ 0 \ 0 \ 1) \). Find the generator matrix (G)?
   
   \[
   \begin{bmatrix}
   10 & 11 & 00 & 11 \\
   11 & 10 & 00 & 11 \\
   11 & 10 & 00 & 11 \\
   \vdots & \vdots & \vdots & \vdots \\
   \end{bmatrix}
   \]
   \[
   \begin{bmatrix}
   11 & 10 & 01 & 11 \\
   11 & 10 & 01 & 11 \\
   11 & 10 & 01 & 11 \\
   \vdots & \vdots & \vdots & \vdots \\
   \end{bmatrix}
   \]
   \[
   \begin{bmatrix}
   11 & 10 & 00 & 11 \\
   11 & 10 & 00 & 11 \\
   11 & 10 & 00 & 11 \\
   \vdots & \vdots & \vdots & \vdots \\
   \end{bmatrix}
   \]
   
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   None of above

6) Given a (2, 1, 3) convolutional code with generator sequences
   \( g^{(0)} = (1 \ 0 \ 1 \ 0) \), \( g^{(1)} = (1 \ 0 \ 1 \ 1) \) and the convolutional encoder is initially at all zero state. If the input sequence \( u \) is \( (1 \ 0 \ 1 \ 1) \) then what will be the encoded output sequence?
7) The generator sequences for rate R=1/2 convolutional code are $g_0(D) = 1 + D^2$, $g_1(D) = 1 + D + D^2$. If the input sequence $u$ is (0 1 1 0) then the output sequence is

- (00, 11, 10, 01, 10,.....)
- (00, 11, 10, 01, 11,.....)
- (01, 10, 10, 01, 10,.....)
- None of above

No, the answer is incorrect.
Score: 0
Accepted Answers:
(00, 11, 10, 01, 10,.....)

8) For the above convolutional encoder the value of (n, k, m) is

- (2, 3, 1)
- (1, 2, 3)
- (3, 2, 1)
- (3, 1, 2)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(3, 1, 2)

9) State diagram of the above encoder is
None of above

No, the answer is incorrect.
Score: 0
The trellis diagram of the above encoder is
None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers: