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NPTEL

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Courses » Information Theory, Coding and Cryptography

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Unit 8 - Week 7

Assignment 7

The due date for submitting this assignment has passed. **Due on 2018-09-19, 23:59 IST.**
As per our records you have not submitted this assignment.

1) The degree of the generator polynomial g(x) is ***1 point***

- n – k + 1
- n + k + 1
- n – k – 1
- n – k

No, the answer is incorrect.
Score: 0

Accepted Answers:
n – k

2) Upon dividing $x^{12} + x^7 + x^4 + x^3 + 1$ by $x^3 + x^2 + 1$ over GF(2) we get the quotient and remainder as ***1 point***

- quotient = $x^9 + x^8 + x^7 + x^5 + x^4 + x^3$ and remainder = 1
- quotient = $x^9 + x^7 + x^5 + x^4 + x^2$ and remainder = 0
- quotient = $x^9 + x^8 + x^4 + x^3$ and remainder = 1
- quotient = $x^9 + x^8 + x^7 + x^6 + x^5 + x$ and remainder = 0

No, the answer is incorrect.
Score: 0

Accepted Answers:
quotient = $x^9 + x^8 + x^7 + x^5 + x^4 + x^3$ and remainder = 1

3) The factors of $x^8 – 1$ over GF(3) are ***1 point***

- $(x + 1)(x^2 + 1)(x^2 + x + 2)(x^2 + 2x + 1)$
- $(x + 1)(x + 2)(x^2 + 1)(x^2 + x + 2)(x^2 + 2x + 2)$
- $(x + 1)(x + 2)(x^2 + 1)(x^2 + x + 1)(x^2 + x + 1)$
- $(x + 1)(x + 2)(x^2 + 2)(x^2 + x + 1)(x^2 + 2x + 2)$

Lectures

- $g(x) = (1+ x)(1 + x + x^4)$
- $g(x) = (1+ x)(1 + x + x^2 + x^3 + x^4)$
- $g(x) = (1+ x)(1 + x^3 + x^4)$
- All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above

5) Consider a binary cyclic code with block length n = 15 and the generator polynomial $g(x) = x^8 + x^7 + x^6 + x^4 + 1$. The parity check polynomial for this is ***1 point***

- $h(x) = x^7 + x^6 + x^4 + 1$
- $h(x) = x^7 + x^5 + x^3 + 1$
- $h(x) = x^7 + x^6 + x^2 + 1$
- $h(x) = x^7 + x^6 + 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$h(x) = x^7 + x^6 + x^4 + 1$

6) The cyclic code given by $g(x) = x^{14} + x^{11} + x^9 + x^5 + x^2 + 1$ is capable of correcting a burst error of up to a length of ***1 point***

- 5
- 6
- 7
- 8

No, the answer is incorrect.
Score: 0

Accepted Answers:
5

7) The generator polynomial for the Fire code with parameters (35, 27) is ***1 point***

- $g(x) = x^8 + x^7 + x^5 + x^2 + x + 1$
- $g(x) = x^8 + x^6 + x^4 + x^3 + x + 1$
- $g(x) = x^7 + x^6 + x^5 + x^2 + x + 1$
- $g(x) = x^8 + x^6 + x^5 + x^3 + x + 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$g(x) = x^8 + x^6 + x^5 + x^3 + x + 1$

8) Consider a CRC code with the generator polynomialg(x) = $x^{16} + x^{15} + x^2 + 1$. Which statement is true: ***1 point***

- (x + 1) is a factor of the generator polynomial
- (x^{15} + x + 1) is a factor of the generator polynomial
- It can detect all odd number of errors
- All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above

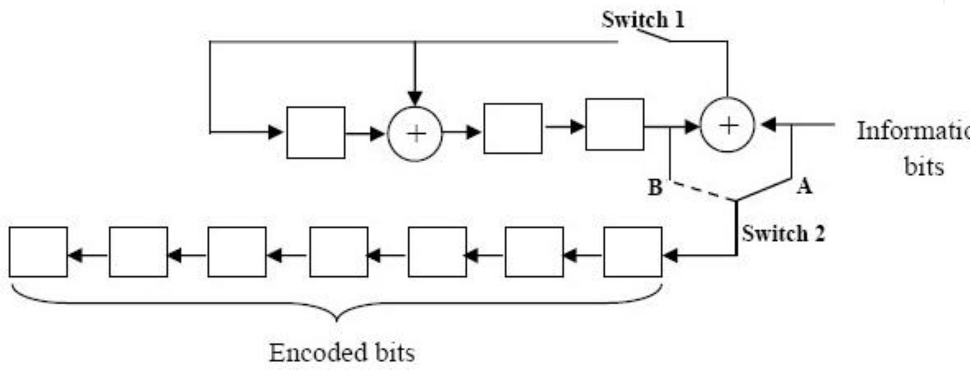
9) If g(x) has a factor(x + 1) then ***1 point***

- All code words have even parity
- We can detect all errors consisting of odd number of bits
- No code word has odd weight
- All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
All of the above

10) Determine the generator polynomial for the circuit shown below. The encoding is done in two steps. **Step 1**: Switch 1 is in open position and we connect Switch 2 to ‘A’ in order to read in the information bits during the 1st four shifts. In **step 2**, Switch 1 is in closed position and we connect Switch 2 to ‘B’ in order to read in the encoded bits in the next three shifts. ***1 point***



- $g(x) = x^3 + x^2 + 1$
- $g(x) = x^2 + x + 1$
- $g(x) = x^3 + x + 1$
- $g(x) = x^3 + x^2 + x + 1$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$g(x) = x^3 + x + 1$

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