X

Unit 2 - Basics of Probability, Conditional Probability, MAP Principle

Assignment 1

The due date for submitting this assignment has passed. Due on 2017-02-07, 23:59 IST.
As per our records you have not submitted this assignment.

1) Q1. The first axiom of probability states *1 point*

- $P(A) \leq 1$
- $P(A) \geq 0$
- $P(A \cup B) = P(A) + P(B)$
- $P(A|B) = P(A \cap B)/P(B)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$P(A) \geq 0$

2) Q2. For two events A, B, it is always true that *1 point*

- $P(A) + P(B) \geq 1$
- $P(A) + P(B) \leq 1$
- $P(A) - P(A \cup B) \leq P(A \cap B)$
- $P(A|B) \leq P(A)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$P(A) - P(A \cup B) \leq P(A \cap B)$

3) Q3. The levels of a M-ary PAM constellation with $M = 8$ are $\{-7\alpha, -5\alpha, -3\alpha, -\alpha, \alpha, 3\alpha, 5\alpha, 7\alpha\}$. The probabilities of these symbols are related as $P((2i-1)\alpha) = 2P((2i-3)\alpha)$, for $-2 \leq i \leq 4$. The probability $P(5\alpha)$ is, *1 point*

- 1/8
- 1/16
- 64/255
- 1/255

Wireless Fading Channel Modeling

Gaussian Random Process, Noise, Bit-Error and Impact on Wireless Systems

No, the answer is incorrect.
Score: 0

Accepted Answers:
64/255

4) Q4. The levels of a *M*-ary PAM constellation with $M = 8$ are $\{-7\alpha, -5\alpha, -3\alpha, -\alpha, \alpha, 3\alpha, 5\alpha, 7\alpha\}$. The probabilities of these symbols are related as $P((2i-1)\alpha) = 2P((2i-3)\alpha)$, for $-2 \leq i \leq 4$. Consider two events $A = \{-7\alpha, -3\alpha, \alpha\}$, $B = \{-5\alpha, -3\alpha, 7\alpha\}$. The probability $P(A \cup B)$ is, ***1 point***

- 63/255
- 3/8
- 1/127
- 151/255

No, the answer is incorrect.
Score: 0

Accepted Answers:
151/255

5) Q5. The levels of a *M*-ary PAM constellation with $M = 8$ are $\{-7\alpha, -5\alpha, -3\alpha, -\alpha, \alpha, 3\alpha, 5\alpha, 7\alpha\}$. The probabilities of these symbols are related as $P((2i-1)\alpha) = 2P((2i-3)\alpha)$, for $-2 \leq i \leq 4$. Consider two events $A = \{-3\alpha, -\alpha, \alpha, 3\alpha\}$, $B = \{-7\alpha, -3\alpha, \alpha, 5\alpha\}$. The probability $P(A|B)$ is, ***1 point***

- 4/17
- 85/255
- 22/255
- 19/127

No, the answer is incorrect.
Score: 0

Accepted Answers:
4/17

6) Q6. Two events A, B are independent if and only if, ***1 point***

- $P(A \cup B) = P(A) + P(B) - P(A)P(B)$
- $P(A|B) = P(B)$
- $P(A \cap B)/P(A) = P(A|B)$
- All of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
$P(A \cup B) = P(A) + P(B) - P(A)P(B)$

7) Q7. The levels of a *M*-ary PAM constellation with $M = 8$ are $\{-7\alpha, -5\alpha, -3\alpha, -\alpha, \alpha, 3\alpha, 5\alpha, 7\alpha\}$. The probabilities of these symbols are related as $P((2i-1)\alpha) = 2P((2i-3)\alpha)$, for $-2 \leq i \leq 4$. Let x_1, x_2 denote the symbols at time instants 1, 2 respectively. Consider two events $A = \{-3\alpha, -\alpha, \alpha, 3\alpha\}$, $B = \{-7\alpha, -3\alpha, \alpha, 5\alpha\}$. If the symbols at different time instants are *independent*, then probability $P((x_1 \in A) \cap (x_2 \in B))$ is, ***1 point***

- 3/255
- 4/51
- 4/85
- 33/255

No, the answer is incorrect.
Score: 0

Accepted Answers:

4/51

8) Q8. The levels of a *M*-ary PAM constellation with $M = 8$ are $\{-7\alpha, -5\alpha, -3\alpha, -\alpha, \alpha, 3\alpha, 5\alpha, 7\alpha\}$. The probabilities of these symbols are related as $P((2i-1)\alpha) = 2P((2i-3)\alpha)$, for $-2 \leq i \leq 4$. Let x_1, x_2 denote the symbols at time instants 1, 2 respectively. Consider two events $A = \{-3\alpha, -\alpha, \alpha, 3\alpha\}$, $B = \{-7\alpha, -3\alpha, \alpha, 5\alpha\}$. If the symbols at different time instants are *independent*, then probability $P((x_1 \in A) \cup (x_2 \in B))$ is, **1 point**

- 151/255
- 3/255
- 17/127
- 25/51

No, the answer is incorrect.
Score: 0

Accepted Answers:
25/51

9) Q9. The levels of a *M*-ary PAM constellation with $M = 8$ are $\{-7\alpha, -5\alpha, -3\alpha, -\alpha, \alpha, 3\alpha, 5\alpha, 7\alpha\}$. The probabilities of these symbols are related as $P((2i-1)\alpha) = 2P((2i-3)\alpha)$, for $-2 \leq i \leq 4$. Let x_1, x_2 denote the symbols at time instants 1, 2 respectively. Consider two events $A = \{-5\alpha, -\alpha, \alpha, 5\alpha\}$, $B = \{-7\alpha, -3\alpha, 3\alpha, 7\alpha\}$. If the symbols at different time instants are *independent*, then probability $P((x_1 \in A)|(x_2 \in A \cup B))$ is, **1 point**

- 2/17
- 4/17
- 6/17
- 8/17

No, the answer is incorrect.
Score: 0

Accepted Answers:
6/17

10) Q10. The levels of a *M*-ary PAM constellation with $M = 8$ are $\{-7\alpha, -5\alpha, -3\alpha, -\alpha, \alpha, 3\alpha, 5\alpha, 7\alpha\}$. The probabilities of these symbols are related as $P((2i-1)\alpha) = 2P((2i-3)\alpha)$, for $-2 \leq i \leq 4$. The symbols at different time instants are *independent*. Also, for each symbol x, the probability of symbol error e is $P(e|x) = N_x/10$, where N_x is the number of neighbors of x. For example, -3α, α are the neighbors of $-\alpha$. What is the average probability of symbol error? **1 point**

- 67/850
- 87/850
- 107/850
- 127/850

No, the answer is incorrect.
Score: 0

Accepted Answers:
127/850

Previous Page End