X

Unit 3 - Random Variables, Probability Density Functions, Applications i Wireless Channels

Assignment 2

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) Consider N mutually exclusive and exhaustive events A_0, A_1, A_2,..., A_{N-1} and another event B. From Bayes' theorem, the probability $P(A_i|B)$ is, ***1 point***

- $\frac{P(B\cap A_i)}{\sum_{j=0}^{N-1} P(B\cap A_j)}$
- $\frac{P(B|A_i)}{\sum_{j=0}^{N-1} P(B\cap A_j)}$
- $\frac{P(B\cap A_i)P(A_i)}{\sum_{j=0}^{N-1} P(B|A_j)}$
- $\frac{P(B\cap A_i)}{\sum_{j=0}^{N-1} P(B\cap A_j)P(A_j)}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{P(B\cap A_i)}{\sum_{j=0}^{N-1} P(B\cap A_j)}$

1.2)Consider a binary “asymmetric” channel with $P(A_0) = 0.15$, $P(B_1|A_0) = 0.20$, $P(B_1|A_1) = 0.75$, ***1 point*** where A_i, B_i denote the events corresponding to transmitted and received symbols $i \in \{0, 1\}$ at the transmitter and receiver respectively. Then, $P(A_1)$, $P(B_0|A_1)$ respectively are,

- 0.85, 0.80
- 0.15, 0.25
- 0.85, 0.25
- 0.15, 0.80

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.85, 0.25

3) Consider a binary "asymmetric" channel with $P(A_0) = 0.15$, $P(B_1|A_0) = 0.20$, $P(B_1|A_1) = 0.75$, ***1 point***
where A_i, B_i denote the events corresponding to transmitted and received symbols $i \in \{0, 1\}$ at the transmitter and receiver respectively. Which of the following values correspond to a particular "likelihood" in this system

- *0.15*
- 0.85
- *0.70*
- 0.80

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.80

4) Consider a binary "asymmetric" channel with $P(A_0) = 0.15$, $P(B_1|A_0) = 0.20$, $P(B_1|A_1) = 0.75$, ***1 po***
where A_i, B_i denote the events corresponding to transmitted and received symbols $i \in \{0, 1\}$ at the transmitter and receiver respectively. What is the aposteriori probability $P(A_0|B_0)$?

- 0.46
- 0.36
- 0.66
- 0.56

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.36

5) Consider a binary "asymmetric" channel with $P(A_0) = 0.15$, $P(B_1|A_0) = 0.20$, $P(B_1|A_1) = 0.75$, ***1 point***
where A_i, B_i denote the events corresponding to transmitted and received symbols $i \in \{0, 1\}$ at the transmitter and receiver respectively. What are the MAP estimates corresponding to the observations 0,1 respectively at the receiver,

- 0, 0
- 0, 1
- 1, 0
- 1, 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
1, 1

6) Consider a binary "asymmetric" channel with $P(A_0) = 0.15$, $P(B_1|A_0) = 0.20$, $P(B_1|A_1) = 0.75$, ***1 point***
where A_i, B_i denote the events corresponding to transmitted and received symbols $i \in \{0, 1\}$ at the transmitter and receiver respectively. What is the probability of error for the MAP receiver?

- 0.15
- 0.24
- 0.20
- 0.28

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.15

7) Consider a binary "asymmetric" channel with $P(A_0) = 0.15$, $P(B_1|A_0) = 0.20$, $P(B_1|A_1) = 0.75$, ***1 point***
where A_i, B_i denote the events corresponding to transmitted and received symbols $i \in \{0, 1\}$ at the transmitter and receiver respectively. What are the ML estimates corresponding to the observations 0,1 respectively at the receiver?

- 0,0
- 0,1
- 1,0
- 1,1

No, the answer is incorrect.
Score: 0

Accepted Answers:
0,1

8) Consider the probability density function $f_X(x) = Kx^2 exp\left(-x^2\right)$ for $-\infty \leq x \leq \infty$. ***1 point***
The value of constant K is,

- 2
- 0.5
- $\frac{2}{\sqrt{\pi}}$
- $\frac{1}{\sqrt{2\pi}}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{2}{\sqrt{\pi}}$

9) Consider the probability density function $f_X(x) = Kx^2 exp\left(-x^2\right)$ for $-\infty \leq x \leq \infty$. The mean of the random variable is ***1 point***

- 1
- 0.5
- $\sqrt{\frac{2}{\pi}}$
- *0*

No, the answer is incorrect.
Score: 0

Accepted Answers:
0

10)Consider the probability density function $f_X(x) = Kx^2 exp\left(-x^2\right)$ for $-\infty \leq x \leq \infty$. ***1 point***
The variance of the random variable is,

- 1.5
- 2
- 0.5
- 3

No, the answer is incorrect.
Score: 0

Accepted Answers:
1.5

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