Unit 7 - Week 6

Assignment 6

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-03-11, 23:59 IST.

1) Consider a population that is distributed as $U[0,a]$, where $a > 0$. Then, if a sample size n, i.e. $X_1, X_2, ..., X_n$ is taken, then which of the following statistics are sufficient? *1 point*

I. $\frac{X_1+X_2+X_3+...+X_n}{n}$ II. $X_1 * X_2 * ... * X_n$

III. $Max(X_1, X_2, ..., X_n)$ IV. $Min(X_1, X_2, ..., X_n)$

- I and II
- IV only
- III only
- II and IV

No, the answer is incorrect.
Score: 0
Accepted Answers:
III only

2) In a gamma distribution, which of the following are sufficient statistics for λ in $\Gamma(\lambda, n)$? *0 points*

- Sum
- Product
- Maximum
- Minimum

No, the answer is incorrect.
Score: 0
Accepted Answers:
Product

3) Let $X_1, X_2, ..., X_k$ be a sample of size k taken from a population that is distributed as $N(\mu, 1)$. Which of the following is a maximum likelihood estimator for μ: *1 point*

- $\overline{X}$
- $\frac{1}{\overline{X}}$
- $\overline{X} - 1$
- $\overline{X} + 1$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\overline{X}$

4) Let $X_1, X_2, ..., X_k$ be a sample of size k from a population that is distributed as . Which of the following is the maximum likelihood estimator for σ^2? *0 points*

- $\frac{1}{n}\sum_{j=1}^{n}(x_j - \mu)^2$
- $\frac{1}{n-1}\sum_{j=1}^{n}(x_j - \mu)^2$
- $\sum_{j=1}^{n}(x_j - \mu)^2$
- $\frac{1}{n+1}\sum_{j=1}^{n}(x_j - \mu)^2$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{n}\sum_{j=1}^{n}(x_j - \mu)^2$

5) Let X be one observation from $N(0, \sigma^2)$. Which of the following is a sufficient statistic for σ? *1 point*

- |X|
- X
- X^2
- -X

No, the answer is incorrect.
Score: 0
Accepted Answers:
|X|
X
X^2
-X

6) Let $X_1, X_2, ..., X_k$ be a random sample of size k from $Bin(n, p)$ then which of the following is a sufficient statistic for p? *1 point*

- $X_1 + X_2 + X_3 + ... + X_k$
- $X_1 * X_2 * ... * X_k$
- $Max(X_i)$
- $Min(X_i)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$X_1 + X_2 + X_3 + ... + X_k$

7) Let $X_1, X_2, ..., X_k$ be a random sample of size k from $Bin(n, p)$,then which of the following is a maximum likelihood estimate for the parameter p? *1 point*

- $\overline{X}$
- $\frac{1}{\overline{X}}$
- $\frac{n}{\overline{X}}$
- $\frac{\overline{X}}{n}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{\overline{X}}{n}$

8) Let $X_1, X_2, ..., X_k$ be a random sample of size k from a population distributed as $Geometric(p)$, i.e. with the random variable defined by the distribution function: $f_X(x) = p(1-p)^{x-1}$ $(x > 0)$, find the method of moment estimate for p? *1 point*

- $\overline{X}$
- $\frac{1}{\overline{X}}$
- $\frac{1}{k*\overline{X}}$
- $\frac{1}{1+\overline{X}}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{1}{\overline{X}}$

9) Assume a random variable $X \sim Binomial(2, p)$. The value of X is observed as $x_1 = 1$, $x_2 = 2, x_3 = 0, x_4 = 2$. Which of the following the maximum likelihood estimate of p? *1 point*

- 0.5
- 1
- 0.63
- 2

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.63

10) Let $X_1, X_2, ..., X_k$ be a random sample of size k from a population distributed as $\Gamma(\lambda, n)$.Using method of moments estimator, which of the following is an unbiased estimator for λ? *0 points*

- $\frac{n}{\overline{X}}$
- $\frac{1}{\overline{X}}$
- $\frac{nk-1}{k*\overline{X}}$
- $\overline{X}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\frac{n}{\overline{X}}$