

Unit 3 - Week 2

Course outline

How does an NPTEL online course work?

Week 1

Week 2

• Statistical Inference-4

• Statistical Inference-5

○ Quiz : Assignment 2

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Week 3

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Assignment Solution

Assignment 2

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

Due on 2020-02-12, 23:59 IST.

All the 10 questions are in MCQ format each with exactly one correct answer. In all the following questions, $N(u, v)$ is a normal distribution with u as the mean and v as the variance.

1) Which of the following is an unbiased estimator of the σ^2 (population variance) ?

1 point

- s^2
 S^2
 $nS^2/(n-1)$
 $ns^2/(n-1)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 s^2
 $nS^2/(n-1)$

2) Suppose a population of infinite size consists of IID variables distributed as $N(76, 1000)$. Find the probability that mean of a sample of size 10 is less than equal to 88? (assume $\phi(x)$ to be the CDF of standard normal distribution)

1 point

- $\phi(12)$
 $\phi(1.2)$
 $\phi(0.12)$
 $\phi(0.012)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\phi(1.2)$

3) There are two maternity hospitals in a town with 50 and 500 beds. Given full occupancy on a particular day, which of these hospitals is more likely to have equal no of boys and girls given probability of boys = probability of girls ?

1 point

- One with 500 beds
 One with 50 beds
 Insufficient Information
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
One with 50 beds

4) In the above question, does the answer violate the law of large numbers?

0 points

- Yes
 No
 Can't Comment
 Insufficient Info

No, the answer is incorrect.
Score: 0

Accepted Answers:
No

5) Given n i.i.d. realisations of a Bernoulli R.V. $X_i (i \in 1, 2, \dots, n) \text{ Ber}(p)$, what is the distribution of $\sum_{i=1}^n X_i$?

1 point

- Poisson with parameter pn .
 Gamma with parameters n and p .
 Binomial with parameters n and p .
 Bernoulli with parameter pn .

No, the answer is incorrect.
Score: 0

Accepted Answers:
Binomial with parameters n and p .

6) Let distribution of heights (in inches) for people in cities A, B, C be Poisson distribution with parameters 49, 52, 59, respectively. A sample consisting of 10, 40, 50 is selected from cities A, B, C, respectively. What is the expectation of sample mean?

1 point

- 53.3
 55.1
 52.9
 55.2

No, the answer is incorrect.
Score: 0

Accepted Answers:
55.2

7) Let X be a Uniform Random Variable $U(2, 8.5)$. Find $P(\log X \leq 1)$.

1 point

- .11
 .15
 .23
 .13

No, the answer is incorrect.
Score: 0

Accepted Answers:
.11

8) Standard error of the mean is the standard deviation of the -

1 point

- Population
 Sample
 Sampling Distribution of X
 None of these

No, the answer is incorrect.
Score: 0

Accepted Answers:
None of these

9) Let the distribution of marks out of 240 for girls and boys appearing for an examination be $N(78, 32)$ and $N(80, 168)$ respectively. Let X be a sample consisting of 10 boys and 10 girls. What is the probability that X lies in $[81, 83]$?

1 point

- $\phi(0.4) - \phi(0.2)$
 $\phi(0.5) - \phi(0.25)$
 $\phi(0.5122) - \phi(0.2561)$
 $\phi(1.7888) - \phi(0.8944)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $\phi(1.7888) - \phi(0.8944)$

10) Evaluate approximately $P(X > 400)$ where X is a binomial random variable with parameters 1000 and .3. Given $\phi(6.9) = .9998$.

1 point

- .2
 .02
 .002
 .0002

No, the answer is incorrect.
Score: 0

Accepted Answers:
.0002