

## Course outline

How does an NPTEL online course work?

Week 0 :

Week 01

Week 02

Week 03

Lecture 23 : Sampling

Lecture 24 : Sampling (Contd.)

Lecture 25 : Central Limit Theorem

Lecture 26 : Law of Large Numbers (LLN)

Lecture 27 : Properties of Estimator

Lecture 28 : Conflict Between Unbiasedness and Min Variance

Lecture 29 : T-Distribution

Lecture 30: Normal Distribution

Lecture 31: Normal Distribution (Contd.)

Quiz: Week 3:Assignment 3

Feedback for Week 3

Week 04

Week 05 :

Week 06

Week 07

Week 08

Week 09

Week 10

Week 11

Week 12

Course Material

Download Videos

Assignment Solution

## Week 3:Assignment 3

The due date for submitting this assignment has passed.

Due on 2021-08-25, 23:59 IST.

As per our records you have not submitted this assignment.

- 1) Identify the right statement:
- probability density is equal to probability in case of Continuous Random Variable
  - probability density could have a value more than 1
  - Y axis represents probability for a normal distribution curve
  - A higher standard deviation will make the normal distribution curve steeper

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

1 point

- 2) Mean age of the students in your class is 23. Standard deviation is 2.2. What is the probability of getting students age above 27.4?

- 5%
- 2.5%
- .3%
- .15%
- 32%

- ☐ a  
☐ b  
☐ c  
☐ d  
☐ e

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

1 point

- 3) What is the best type of sampling for a population which is made up of groups with a lot of variation within them but minimal variance between the groups?
- Convenience Sampling
  - Cluster Sampling
  - Judgmental sampling
  - Stratified Sampling

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

1 point

- 4) Which of the following is **false**?
- In order to reduce the standard error by half, sample size should be increased by a factor of 4.
  - Standard error computed based on a sample standard deviation will always be lower than the standard deviation of that sample.
  - Sample size should be doubled to reduce the standard error by half.
  - Standard error measures the variability in means of samples of the same size taken from the same population

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

c

1 point

- 5) Which of the following information's are required to get the t-value from t-table?

- Significance level
- Right tail area
- Degrees of freedom
- Standard Error

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

a

b

c

1 point

- 6) Calculate the degrees of freedom in a t-distribution for two independent samples with sample size  $n_1$  and  $n_2$ , and  $n_1=n_2=n$

- $n-1$
- $2n-2$
- $2n+2$
- $n-2$

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

1 point

- 7) Model 1 uses a linear function to fit the relationship between two variables. Model 2 uses a  $n$ th degree polynomial to fit the relationship between the same variables. Then, which of the following are correct:

- Bias of Model 1 is less than or equal to Model 2
- Bias of Model 1 is greater than or equal to Model 2
- Variance of Model 1 is less than or equal to Model 2
- Variance of Model 1 is greater than or equal to Model 2

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

c

1 point

- 8) If an estimator has minimum variance, then

- The estimator is efficient
- The estimator would be termed" best"
- The estimator will be always unbiased
- Sampling variance in the parameter estimates will be minimized

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

a

b

d

1 point

- 9) Which of the following statements are correct?

- A sample size more than 20 is considered as large enough
- The t curve is more spread out than a z curve
- a sample size more than 30 is considered as large enough.
- For large samples, t distribution approaches normal distribution

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b

c

d

1 point

- 10) Identify the false statement

- With more and more trials, a binomial distribution approximates to a normal distribution
- The binomial distribution approximates to a symmetric normal if the probability of success is close to .1 in the binomial trial
- Standard error decreases as sample size increases
- iID random variables need to fulfill these conditions - same mean, the same standard deviation, and the samples are drawn independently of each other

- ☐ a  
☐ b  
☐ c  
☐ d

No, the answer is incorrect.

Score: 0

Accepted Answers:

b