

Assignment 3 (Week 3)

Due on 2016-02-20, 00:29 IST

Submitted assignment

1) Null and alternate Hypotheses are statements about:

1 point

- ☒ Population parameters
- ☐ Sample parameters
- ☐ Sampling statistics
- ☐ None of these

2) In hypothesis testing a type-II error occurs when

1 point

- ☐ The null hypothesis is not rejected when the null hypothesis is true
- ☐ The null hypothesis is rejected when the null hypothesis is true
- ☒ The null hypothesis is not rejected when the alternate hypothesis is true
- ☐ None of these

3) The null and alternative hypotheses divide all possibilities into:

1 point

- ☐ two sets that overlap
- ☒ two non-overlapping sets

- ☐ Both of these
- ☐ None of these

4) A two-tailed test is one where:

1 point

- ☐ results in only one direction can lead to rejection of the null hypothesis
- ☐ negative sample means lead to rejection of the null hypothesis
- ☒ results in either of two directions can lead to rejection of the null hypothesis
- ☐ None of these

5) If random samples of size ≥ 30 are drawn from a population with known population variance (σ^2), the sample means follow:

1 point

- ☐ F-distribution
- ☐ normal distribution
- ☒ t-distribution
- ☐ Chi-square distribution

6) A random sample of size $n = 4$ is drawn from a population with $\mu=200$, $\sigma^2=100$. Test the hypothesis for the following conditions and choose the correct one: $H_0: \mu = 200$ and $H_1: \mu > 200$, when the sample mean is 214.

1 point

- ☒ Null hypothesis is rejected
- ☐ Alternate hypothesis is rejected
- ☐ Cannot be determined

7) Using the data given in question no. 6, set the hypotheses for a two-tailed test.

1 point

- ☐ $H_0: \mu = 200$ and $H_1: \mu < 200$
- ☐ $H_0: \mu = 200$ and $H_1: \mu > 200$
- ☒ $H_0: \mu = 200$ and $H_1: \mu \neq 200$
- ☐ None of the above.

8) Choose the correct 95% confidence interval (CI) of population mean for the given information that: (i) it is a normal population, (ii) population standard deviation, $\sigma=3.50$, (iii) sample size $n=30$, (iv) sample mean = 20.

2 points

- ☒ 18.75 $\leq \mu \leq$ 21.25
- ☐ 25.00 $\leq \mu \leq$ 30.25
- ☐ 35.00 $\leq \mu \leq$ 39.25
- ☐ 37.75 $\leq \mu \leq$ 48.25

9) Consider question no. 8. Choose the correct 95% CI of μ when σ is unknown, and sample standard deviation (s) is 4.25.

2 points

- ☐ 28.75 $\leq \mu \leq$ 30.25
- ☐ 29.75 $\leq \mu \leq$ 35.00
- ☐ 36.75 $\leq \mu \leq$ 38.25
- ☒ 18.48 $\leq \mu \leq$ 21.52

10) A 95% confidence interval for the mean of a population is such that:

1 point

- ☐ It contains 95% of the values of the population
- ☐ There is a 95% chance that it contains all the values of the population.
- ☐ There is a 95% chance that it contains the mean of the population
- ☒ None of these

11) A researcher computes a 95% confidence interval for μ whereas σ is known. The confidence interval is 18000 to 22000, the value of the sample mean is:

2 points

- ☐ 81000
- ☐ 90000
- ☒ 20000
- ☐ None of these

12) In a hypothesis testing of equality of two population means, i.e., $H_0: \mu_1 = \mu_2$, the test statistic follows t-distribution. If two independent samples of size $n_1 = n_2 = n$ are collected from the two populations, respectively, the degrees of freedom of the test statistic is equal to:

1 point

- ☐ $2n - 1$

- ☐ $2n - 2$
- ☒ $n - 2$
- ☐ None of these