



NARSIMHAREDDY ENGINEERING COLLEGE
(UGC AUTONOMOUS)

II B.Tech I Semester (NR25)

MATHEMATICAL AND STATISTICAL FOUNDATIONS (25MA301)

UNIT-IV

Tests of Hypotheses (Large and Small Samples)

Multiple Choice Questions

1. A statistical hypothesis is [b]
A) A mathematical formula
B) **A statement about a population parameter**
C) A sample observation
D) A probability distribution
2. The hypothesis that is tested directly is called the [c]
A) Alternative hypothesis
B) Research hypothesis
C) **Null hypothesis (H_0)**
D) Statistical hypothesis
3. The hypothesis accepted when the null hypothesis is rejected is called [c]
A) Simple hypothesis
B) Composite hypothesis
C) **Alternative hypothesis (H_1)**
D) Random hypothesis
4. The probability of rejecting a true null hypothesis is called [c]
A) Power of the test
B) Beta error
C) **Level of significance (α)**
D) Confidence level
5. A Type I error occurs when [b]
A) A false null hypothesis is accepted
B) **A true null hypothesis is rejected**
C) A true null hypothesis is accepted
D) A sample is incorrect

6. A Type II error occurs when [b]
A) A true null hypothesis is rejected
B) **A false null hypothesis is accepted**
C) The sample size is small
D) The variance is zero
7. A one-sample t-test is used to test [c]
A) Two population means
B) Two proportions
C) **A single population mean when variance is unknown**
D) Population variance
8. The two-sample t-test with equal unknown variances is used to compare [b]
A) Two variances
B) **Two population means**
C) Two proportions only
D) One mean and one variance
9. A one-sample proportion test is used to test [c]
A) Population variance
B) Population mean
C) **A single population proportion**
D) Two sample means
10. A two-sample proportion test compares [b]
A) Two population means
B) **Two population proportions**
C) Two variances
D) Two medians
11. The F-test is mainly used to compare [d]
A) Means
B) Proportions
C) Medians
D) **Variances**
12. The F-distribution is [c]
A) Symmetric
B) Uniform
C) **Right-skewed**
D) Bell-shaped
13. The decision to reject or not reject H_0 is based on [c]
A) Sample size only
B) Population size only
C) **Test statistic and critical value (or p-value)**
D) Mean only

14. The significance level commonly used in hypothesis testing is [c]

- A) 20%
- B) 15%
- C) **5%**
- D) 50%

15. The power of a statistical test is [b]

- A) Probability of a Type I error
- B) **Probability of rejecting a false null hypothesis**
- C) Probability of accepting H_0 always
- D) Probability of selecting a sample

Fill in the Blanks

1. A statistical hypothesis is a statement about a population _____.

Answer: parameter

2. The null hypothesis is denoted by _____.

Answer: H_0

3. The alternative hypothesis is denoted by _____.

Answer: H_1

4. The probability of committing a Type I error is represented by _____.

Answer: α (alpha)

5. Rejecting a true null hypothesis is called a _____ error.

Answer: Type I

6. Accepting a false null hypothesis is called a _____ error.

Answer: Type II

7. A one-sample t-test is used to test a single population _____.

Answer: mean

8. A two-sample t-test with equal unknown variances compares two population _____.

Answer: means

9. A one-sample test on a single proportion is used to test a population _____.

Answer: proportion

10. A two-sample proportion test compares two population _____.

Answer: proportions

11. The F-test is used to compare two population _____.

Answer: variances

12. The F-distribution is always _____ skewed.

Answer: right

13. The value calculated from sample data for testing a hypothesis is called the test _____.

Answer: statistic

14. The most commonly used significance level is _____.

Answer: 0.05 (5%)

15. The probability of correctly rejecting a false null hypothesis is called the _____ of the test.

Answer: power