



UNIT-IV: Tests of Hypotheses (Large and Small Samples)

1. A statistical hypothesis is:

- A) A mathematical equation B) **A statement about a population parameter**
 C) A sample observation D) A graph

Answer: B

2. The null hypothesis is denoted by:

- A) H_1 B) H_2 C) **H_0** D) H

Answer: C

3. The alternative hypothesis is represented by:

- A) H_0 B) **H_1** C) α D) β

Answer: B

4. The level of significance is usually denoted by:

- A) β B) σ C) μ D) **α**



Answer: D

5. A Type I error occurs when:

- A) Accepting a false H_0 B) **Rejecting a true H_0**
 C) Rejecting a false H_0 D) None of these

Answer: B

6. A Type II error occurs when:

- A) Rejecting a true H_0 B) **Accepting a false H_0** C) Rejecting a false H_0 D) None

Answer: B

7. The Z-test is generally used for:

- A) Small samples only B) **Large samples** C) Qualitative data D) Frequency tables

Answer: B

8. Student's t-test is used when:

- A) Sample size is large
 C) **Sample size is small and population variance is unknown**
 B) Population variance is known
 D) None

Answer: C

9. For testing a single population mean with large samples, we use:

- A) t-test B) χ^2 -test C) **Z-test** D) F-test

Answer: C

10. Two-sample t-test assumes:

- A) Population variances are unequal
 B) **Population variances are equal but unknown**
 C) Population means are equal
 D) Sample sizes must be large

Answer: B

11. The F-test is mainly used to compare:

- A) Means B) Medians C) **Variances** D) Proportions



Answer: C

12. The F-statistic is calculated as:

- A) $\text{Mean}_1/\text{Mean}_2$ B) **$\text{Variance}_1/\text{Variance}_2$**
 C) SD_1/SD_2 D) n_1/n_2

Answer: B

13. A test concerning a single proportion uses:

- A) t-test B) F-test C) χ^2 -test D) **Z-test**

Answer: D

14. The standard normal distribution has mean:

- A) 1 B) **0** C) 5 D) -1

Answer: B

15. Which test is used for comparing two proportions?

- A) t-test B) **Z-test** C) F-test D) χ^2 -test

Answer: B

16. The critical region is also called:

- A) Acceptance region B) **Rejection region** C) Confidence region D) Sample region

Answer: B

17. If calculated test statistic is greater than the critical value:

- A) Accept H_0 B) **Reject H_0** C) Increase sample size D) None

Answer: B

18. Degrees of freedom in a one-sample t-test are:

- A) n B) n+1 C) **n-1** D) n-2 **Answer: C**

19. Which distribution is used for variance testing?

- A) Z B) t C) χ^2 D) F

Answer: D



20. The probability of Type I error equals:

- A) β B) **α** C) $1-\alpha$ D) $1-\beta$

Answer: B

Fill in the Blanks

1. A statement about a population parameter is called a **statistical hypothesis.**
2. The null hypothesis is denoted by **H_0 .**
3. The alternative hypothesis is represented by **H_1 .**
4. The probability of Type I error is called the **level of significance.**
5. The symbol for level of significance is **α .**
6. Rejecting a true null hypothesis is called **Type I error.**
7. Accepting a false null hypothesis is called **Type II error.**
8. The **Z-test** is generally used for **large samples.**
9. The **t-test** is used for small samples.
10. The **F-test** is used for comparing two variances.
11. The ratio of two sample variances follows the **F-distribution.**
12. The standard normal distribution has **mean 0.**
13. The standard normal distribution has standard deviation **1.**

14. For testing a single population proportion, the **Z-test** is commonly used.
15. In a one-sample t-test, degrees of freedom are **$n-1$** .
16. The rejection region is also called the **critical region**.
17. If the calculated value exceeds the table value, **H_0 is rejected**.
18. The two-sample t-test assumes **equal** population variances.
19. The sample variance is denoted by **s^2** .
20. The decision to reject or accept H_0 depends on the **test statistic** and **critical value**.

