

II. Fill in the blanks.

1. A finite subset of population is called sample
2. All the moments of odd order of t-distribution zero
3. Mean of t-distribution 0
4. Chi-square distribution is to test the independence of attributes
5. F-distribution is to test the equality of two population variances
6. t-distribution is symmetric about the origin

7. t-statistic is given by
$$\frac{\bar{x} - \mu}{\sigma / \sqrt{n}}$$

8. F-statistic is given by
$$\frac{\chi_1^2 / n_1}{\chi_2^2 / n_2}$$

9. Chi-square test is used to test goodness of fit.

10. The variance of t-distribution
$$\frac{n}{n-2}$$

11. Skewness of t-distribution 0

12. M.G.F of χ^2 - distribution $(1-2t)^{-n/2}$

13. C.H.F of χ^2 - distribution $(1-2t)^{-n/2}$

14. In t-distribution M.G.F doesn't exist.

15. F-distribution mean n_2/n_2-2

16. Factorization theorem was introduced by neyman

17. An estimation is said to be unbiased, if $E(t_n) = \underline{\theta}$

18. Method of moments,
$$\mu_r^1 = \int x^r f(x_1, x_2, \dots, x_n) dx$$

19. MLE is not always unique and unbiased

20. Method of moments are less efficient than MLE

III. Short Answers.

1. Define parameter?

Ans: Population constants are called parameter.

2. Define statistic?

Ans: Sample characteristics like sample mean, variance etc are called statistic.

3. Define standard error?

Ans: The standard deviation of sampling distribution of a statistic.

4. Define point estimation?

Ans: Estimating the population parameter based on the sample observations.

5. Define Fisher t-statistic?

Ans: It is a ratio of standard normal variate and chisquare variate divided by its degrees of freedom.

6. Write any two methods of estimation?

Ans: MLE, method of moments

7. What are the criteria of good estimator?

Ans: Sufficiency, unbiasedness, efficiency and sufficiency

8. Write any two application of t-distribution?

Ans: i) To test the difference between two sample means.

9. Method of likelihood can be expressed as?

Ans:
$$L = \prod_{i=1}^n f(x_i, \theta)$$

10. Define interval estimation?

Ans: An estimate of population parameter given by two numbers between which the parameter may be considered to lie is called interval estimation.