

* Test Decisions Using Confidence Intervals:-

Date . . .



(i) If H_0 is Rejected at the significance level α , then there exist a $100(1-\alpha)\%$ confidence interval which yields the same conclusion as the test.

(ii) This is called as "Duality."

Ex: Consider 2 drugs A and B and we want to find whether average change due to drug B is greater (higher) than for drug A, i.e. $H_1: \mu_B > \mu_A$.
So, we want to decide whether H_1 is significant or not.

This is equivalent to constructing $100(1-\alpha)\%$ confidence interval for $\mu_B - \mu_A$ and checking whether H_0 is significant or not.



Conditions when Tests are used:-

① Z-Test:-

- when σ is known
- $n \geq 30$ or Data is Normally Distributed.
- Comparing the Sample mean to a known mean of Population.

② t-Test:-

- when σ is unknown
- $n < 30$ or Data is approximately Normally Distributed.

③ χ^2 -Test:-

- when Distribution is Normal and a fixed variance / Standard Deviation is given.

④ F-Test:-

- when variance needs to be compared.

⑤ χ^2 Goodness of fit Test:-

- used when observed Absolute frequencies are compared with the expected absolute frequencies under H_0 .