**Chapter two**

2-1: interval estimation :-

We study interval estimate in the form of confidence intervals (C.I.),and the C.I. )would be as ,there the true value of lies in the given interval with a probability (1-)

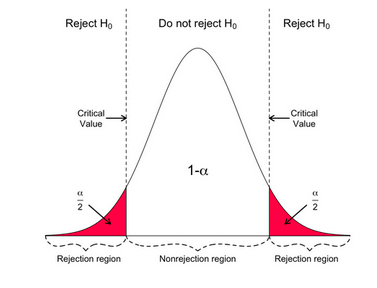
= level of significant

= size of critical region

=probability of type 1 error

(1-)=is cofficent of C.I.

2-1-1: confidence interval for mean of normal population :-



Now observe that using the curve of standard Normal distribution as give , we have

=(1-)%

Where

We have two case

a)- the variance is known:-

=(1-)%

=(1-)%

=(1-)%

Example // a r.s. of size n=20 ,with has a mean =64.3 construct a 95% Confidence interval for the population means?

**B)- IF**

**1)- if n>30**  the C.I. IS same as about except that we replace with (S) and the required C.I. with coefficient (1-)% is :-

=(1-)%

**2)- if n < 30**

The C.I. would be as :-

=(1-)%

T=

=(1-)%

=(1-)%

Example// construct a 95% C.I. for the mean life of light bulbs given that a r.s. of size n=7 ,and with a s.d. =20 hours the average live time = 420 , t=(0.025,6)=

**2-1-3: confidence interval for the variance:-**

If is a random sample taken a normal population with mean(m) and variance and if the sample variance is denoted by , the random variable

Has a chi-squared dist. With ( n-1) degrees of freedom this knowledge enables us to construct a confidence interval as follows

=(1-)%

=(1-)%

=(1-)%

Example// a random sample of