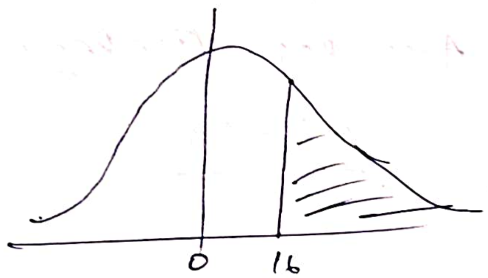
Must — Normal area table pdf

$\therefore$ $p(-\infty < z < 0) + p(0 < z < 1.6) = 0.6$

$= 0.5 + 0.355$

Now $p(z \geq 1.6)$

i.e



$\because$ we have the area for $0 \to \infty$ — 0.5

$\therefore$ area $z \geq 1.6$

$\therefore$ $0.5 - \text{area}(0 \to 1.6)$

Electric Lamp problem 6 –

$p(X \leq 800)$ $\quad N = 1000$

$= p(0 \leq x \leq 800)$

$= p\left(\frac{0-1000}{200} \leq z \leq \frac{800-1000}{200}\right)$

$= p(-5 \leq Z \leq -1)$

$= p(0 < z < 5) - p(0 < z < 1)$

$=$

Normal mean $\to \mu, \sigma$

poisson mean $\to \lambda$

Binomial $\to$

$\to$ finding key term during any problem related to these ~~keys~~ topics

Exponential distribution $\to (\lambda > 0)$

$X \sim ED\ (\lambda > 0)$

if pdf

$$f(x) = \begin{cases} \lambda \cdot e^{-\lambda x} ; & x \geq 0 \\ 0, & \text{otherwise} \end{cases}$$

$f(x) \geq 0$

$\int_{-\infty}^{\infty} f(x)dx =$

$E(x) = \frac{1}{\lambda}$

$Var(x) = \frac{1}{\lambda^2}$

Eg:-

The milage which car owner get with a certain kind of radial tire is with ex distribution mean $= 40000$ find the probabilities of these tires with will these last (i) at least 20000 km, (ii) at most 30000 km.

Sol:- $X \sim ED(\lambda)$ with mean $= \frac{1}{\lambda}$

$$f(x) = \begin{cases} x \cdot e^{-\lambda x} ; & x \geq 0 \\ 0 ; & \text{else} \end{cases}$$

$= 40000$

$\Rightarrow \lambda = \frac{1}{40000}$

(i)

$$p(x \geq 20000) = \frac{1}{40000} \int_{20000}^{x} e^{-\frac{1}{40000}x} \, dx$$

$$p(x \leq 40000) = \int_{-\infty} f(x)\,dx + \int_{20000}^{30000} f(x)\,dx$$

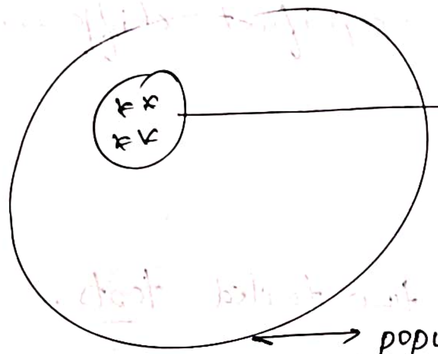
:

N.L

module (5)

Hypothesis Testing :-

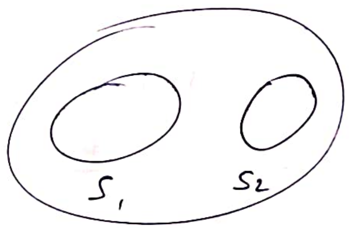
→ Different Parameters



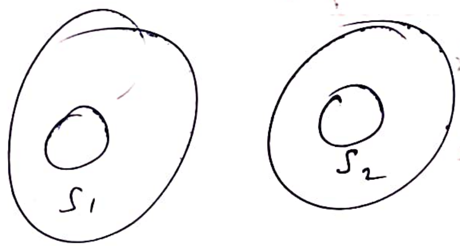
→ sample

population

Sample ⊂ population



→ S_1 and S_2 from a single population



→ S_1 and S_2 from two different populations.

Different types of Statistical Hypothesis :-

i) ~~Statistical~~ Null Hypothesis $(\theta \cong \theta_0)$

ii) ~~Null and~~ Alternative Hypothesis. $(\theta \neq \theta_0)$

Null mean there is no any significant difference whereas Alternative mean there is some significant difference.

Critical Region :-

One tailed and two tailed tests.

Table for z test :-

Name of test	LOS α %		

Types of Sampling theory :-

1.) Large sample

2.) Small sample

Procedure for Hypothesis testing

(i) Null type Hypothesis

$H_0 : \theta = \theta_0$

$H_0 : \theta_1 = \theta_2$

(2) Alternate hypothesis

$H_1 : \theta \neq \theta_0 \quad (\theta_1 = \theta_2)$ → Two tailed test

$H_1 : \theta > \theta_0$ → Right one tailed test

$H_1 : \theta < \theta_0$ → left one tailed-test

(3) $LOS = \alpha\% = 1\%$ or 5%

$= \cancel{0.001}$ 0.01 or 0.05

$z_{\alpha\%} = z_{Table}$

(4) Test statistics $\quad z_{cal} = \dfrac{t - E(t)}{S.E(t)}$

(5) Comparision and Conclusion :-

$|z_{cal}| \lesseqgtr |z_{table}|$

z test for different proportions :-

the test statistics $z =$

z test for single mean :-

$$z = \frac{\bar{x} - \mu}{\sigma / \sqrt{n}}$$

z - test for Difference of means :-

$$z = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$