(9 July)

Assignment

Q.1) A car company believes that the % of residence in city ABC that owns a vehicle is 60% or less. A sales managers disagrees with this. He consider a hypothesis testing surveying 250 residents & found that 170 responded yes to owning a vehicle

(a) State the null & alternate hypothesis

(b) At 10% significance level, is there enough evidence to support the idea that vehicle ownership in city ABC is 60% or less ?

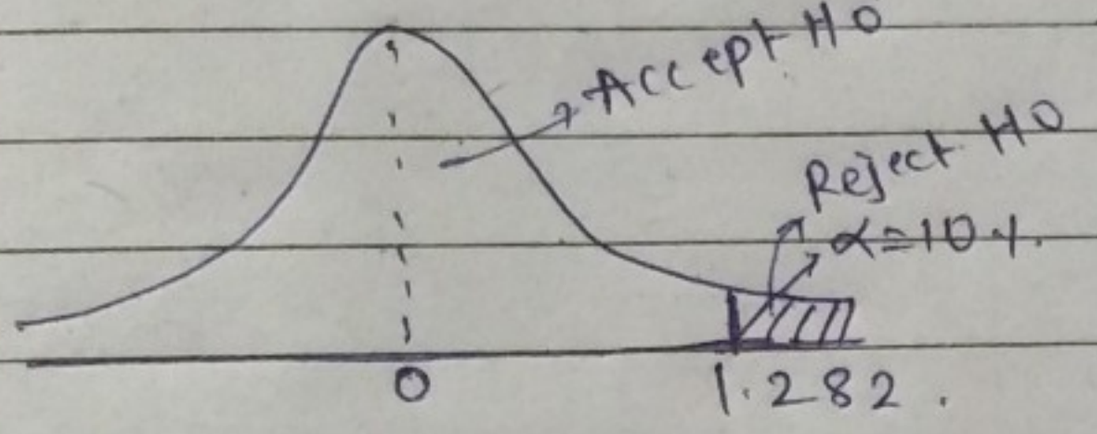
⇒ Given :- $x = 170$, $n = 250$, $\alpha = 10\%$.

① $H_0 : P_0 \leq 60\% \leq 0.6$

$H_1 : P_0 > 0.6$

② $\alpha = 10\% = 0.1 \rightarrow$ z test (one tailed right)

③ Decision boundary



from z-table.

$z = 1.282$ (critical value.)

④ For calculated z.

$$z = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}}$$

$$\hat{P} = \frac{x}{n} = \frac{170}{250} = 0.68$$

$$q_0 = 1 - P_0 = 1 - 0.6 = 0.4$$

$$z = \frac{0.68 - 0.4}{\sqrt{\frac{0.6 \times 0.4}{250}}}$$

$$z = 2.58$$

$\Rightarrow 2.58 > 1.282$

⑤ Conclusion : Reject the null hypothesis.

∴ Does not support the idea to support the ownership.

Teacher's Signature