Assignment - 4

Que In Quant test of CAT exam, the population stdev is known to be 100. A sample of 25 test takers has a mean of 520 Construct a 80% CI about the mean?

Ans

$\sigma = 100$ (use z-test).

$n = 25$.

$\bar{x} = 520$.

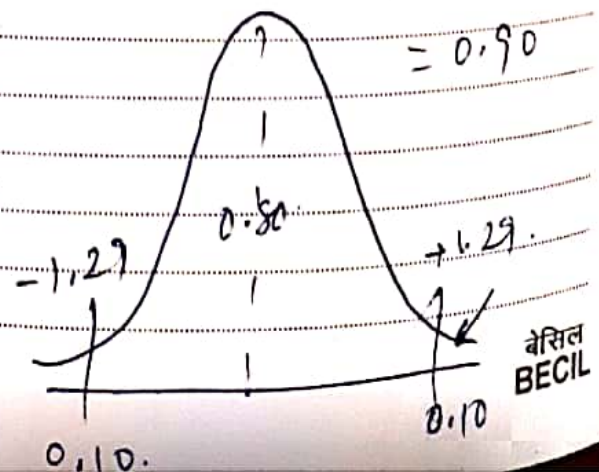$CI = 0.80$, $\alpha = 0.20$.

① $H_0 = 100$

$H_1 \neq 100$.

② $\alpha = 0.20$, $CI = 0.80$. $1 - 0.10$

$= 0.90$

③ Decision interval

-1.29 0.80 $+1.29$

0.10.

④. Z-test. Higher fence

$$P.E \pm MOE.$$

$$\bar{x} + Z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}}$$

$$520 + Z_{0.10} \cdot \frac{100}{\sqrt{25}}$$

$$1.29.$$
$$520 + \cancel{0.81594} \cdot \cancel{100}^{20} / \cancel{5}$$

$$= 520 + \cancel{16.318} \; 25.8$$

$$= \cancel{536.318} \; 545.8$$

Lower fence

$$= \bar{x} - Z_{\alpha/2} \cdot \frac{\sigma}{\sqrt{n}}$$

$$= 520 - \cancel{16.318} \cdot 25.8$$

$$= \cancel{503.682} \; 494.2$$

Conclusion:
$$\left[494.2 \longleftrightarrow 545.8 \right]$$
with $CI = 0.80$