Assignment:

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

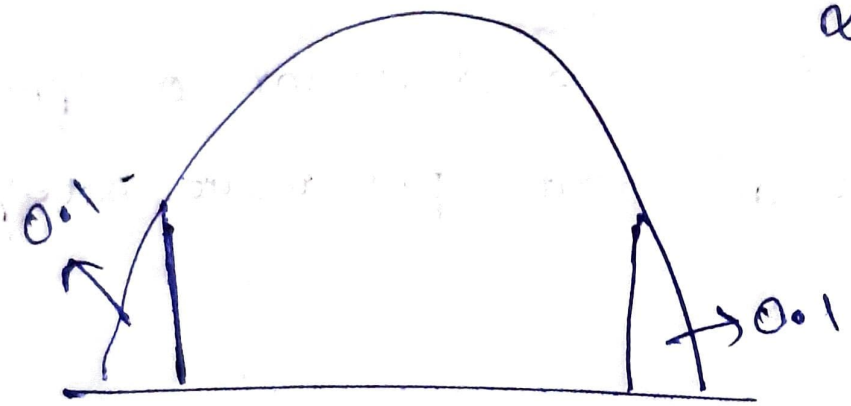
Ans:

$\sigma = 100$; $n = 25$; $\bar{x} = 520$; C.I = 80%.

$\alpha = 1 - C.I$

$= 1 - 80\%$

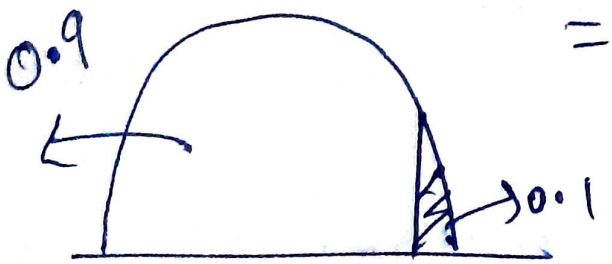
$= 0.2$



$\Rightarrow \bar{x} \pm Z_{\alpha/2}\left(\frac{\sigma}{\sqrt{n}}\right)$

$\Rightarrow Z_{\frac{\alpha}{2}} = Z_{\frac{0.2}{2}}$

$= Z_{0.1} \Rightarrow 1.29$



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

$= 520 - 1.29 \left(\frac{100}{\sqrt{25}}\right)$

$= 520 - 1.29(20)$

$= 494.2$

$\Rightarrow$ Higher Fence $= \bar{x} + Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$

$= 520 + 1.29 \left(\frac{100}{\sqrt{25}}\right)$

$= 520 + 1.29(20)$

$= 545.8$