Q. In 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 % CI. about mean.

Sol.

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

as population std. dev. is given, we will use z-test

$\alpha = 1 - .80 = 0.20$, $\alpha/2 = 0.10$, $z_{\alpha/2} = 1.28$

Lower fence $= \bar{x} - z_{\alpha/2} \frac{\sigma}{\sqrt{n}} = 520 - 1.28 \times \frac{100}{\sqrt{25}} = 494.4$

Upper fence $= 520 + 1.28 \times \frac{100}{\sqrt{25}} = 545.6$

for 80% CI

494.6   545.6