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

Ans. Given,

Population standard deviation (σ)= 100

Sample size (n) = 25

Sample mean $(\bar{x})$ = 520

Parameter = Point Estimate $\pm$ Margin of Error

$$= \bar{x} \pm Z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$$

α = Significance Value

= 1-C.I.

= 1-0.80

=0.20

$= Z_{\frac{\alpha}{2}} = Z_{0.10} = 1.28$

$$Parameter = \bar{x} \pm Z_{\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$$

H.F. = $520 + 1.28 * 20$

= 545.6

L.F. = $520 - 1.28 * 20$

= 494.4