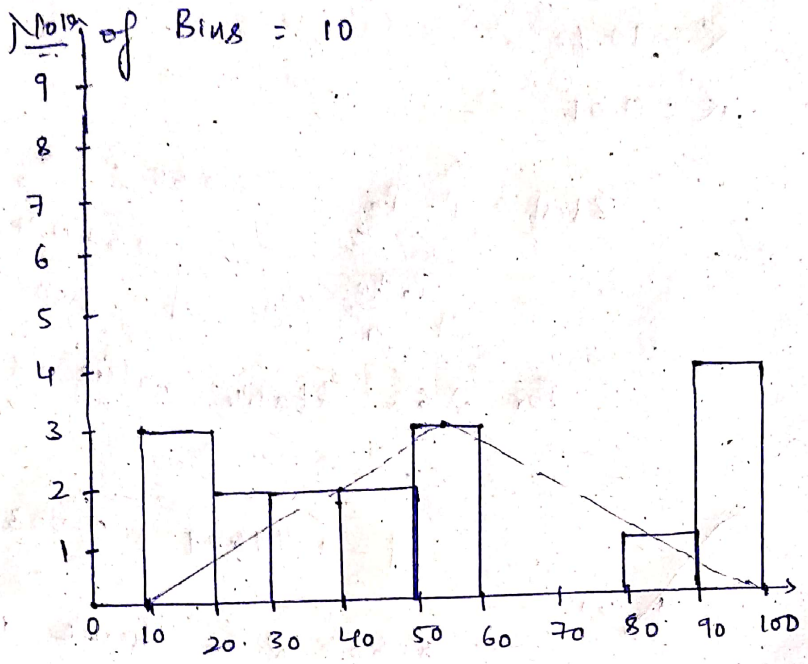
Que 1>

10, 13, 18, 22, 27, 32, 38, 40, 45, 51, 56, 57, 88, 90, 92, 94, 99

Let Bin Size = 10

No. of Bins = 10



Que 2> Given

$\sigma = 100$

$n = 25$

$\bar{x} = 520$

C.I = 80%

$= 1 - 0.8$

$= 0.20$

$C.I = \bar{x} \pm Z_{\alpha/2} \frac{\sigma}{\sqrt{n}}$

$\alpha = 1 - C.I$

$= 1 - 0.8$

$\alpha = 0.2$

$Z_{\alpha/2} = Z_{\frac{0.2}{2}} = Z_{0.1}$

$1 - 0.1 = 0.9 = 1.29$

Z table value

$S.E. = \frac{\sigma}{\sqrt{n}} = \frac{100}{\sqrt{25}} = 20$

$L.f = \bar{x} - Z \frac{\sigma}{\sqrt{n}} = 520 - 1.29 * 20 = 494.2$

$H.f = \bar{x} + Z \frac{\sigma}{\sqrt{n}} = 520 + 1.29 * 20 = 545.8$

C.I = 494.2 to 545.8

Que 3) $H_0: P_0 \geq 60\%$

$H_1: P_0 < 60\%$

$x = 170$

$n = 250$

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

$q_0 = 1 - P_0$ $P_0 = 0.$

$= 1 - 0.6$

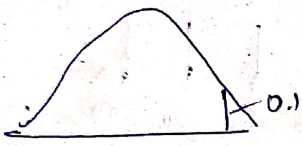
$q_0 = 0.4$

$\alpha = 10\%$

$\alpha = 0.01$

$$Z\text{test} = \frac{\hat{P} - P_0}{\sqrt{\frac{P_0 q_0}{n}}} = \frac{0.68 - 0.6}{\sqrt{\frac{0.6 * 0.4}{250}}} = 2.66$$

For 2.66 Z table value is 0.99609



$1 - 0.99609 = 0.0031$

$2.66 > 2.56$ hence Accept H_0

Que 4) 2, 2, 3, 4, 5, 5, 5, 6, 7, 8, 8, 8, 8, 8, 9, 9, 10, 11, 11, 12

$$99\text{th percentile} = \frac{99(n+1)}{100} = \frac{99(20+1)}{100}$$

$= 20.79 = 20^{\text{th}}$ index

$= 12$

Que 5) Left skewed data. Right skewed data.

Mean < Median < Mode Mean > Median > Mode