Date ___/___/_____

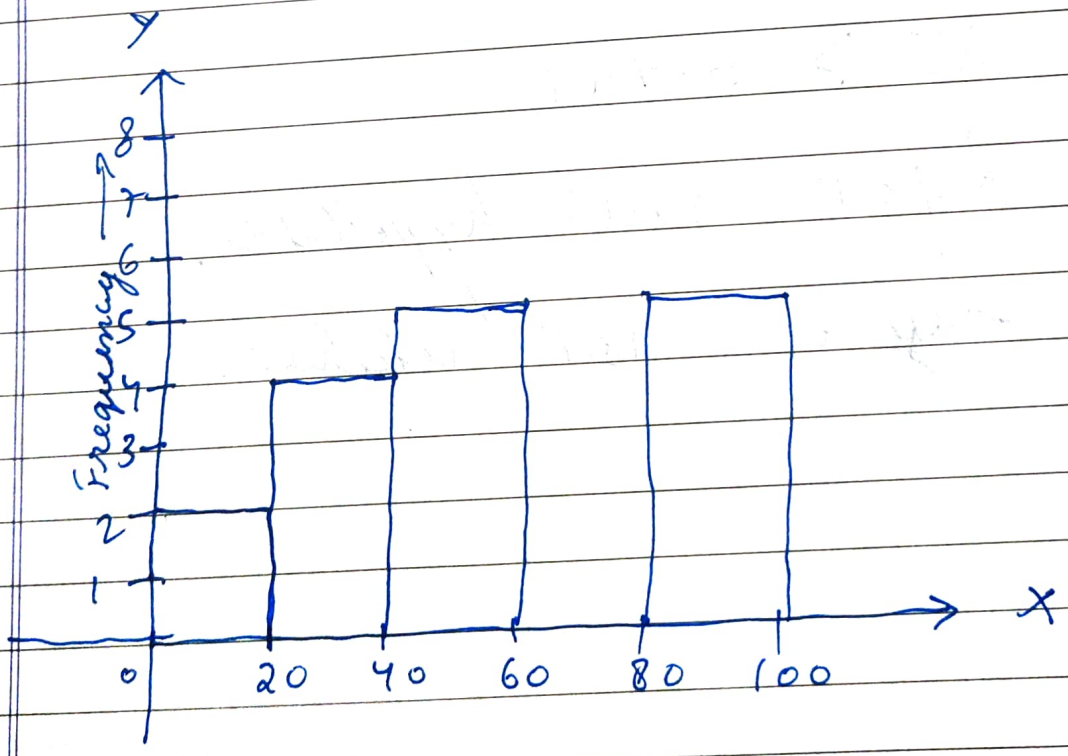
Assignment:-

Q-1 Plot a histogram

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

Ans 1 no of bin = 5
bin size = 20

bin	frequency
0-20	3
20-40	4
40-60	5
60-80	0
80-100	5



1 - 0.10 = 0.90

Date

Saathi

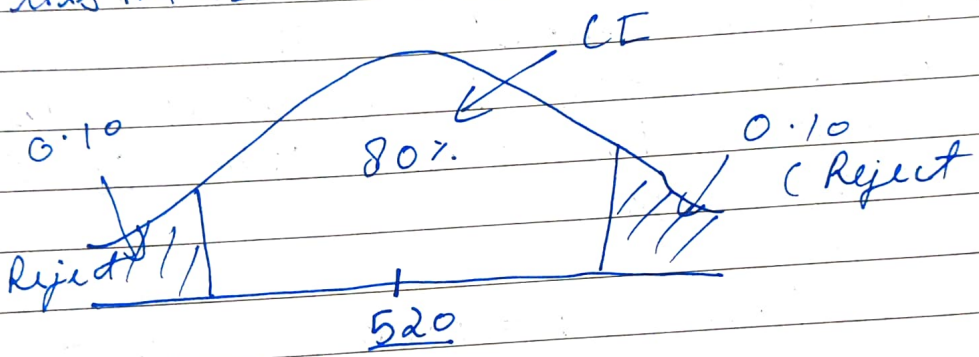
Q-2 In a Quant test of CAT Exam, population standard deviation is known to be 100. A sample of 25 test takers has a mean of 520, construct an 80% CI about the mean.

Ans-2 Given :- population standard deviation $\sigma = 100$

$n = 25$ $\quad \bar{x} = 520$

$CI = 80\%$ $\quad \alpha = 0.20$

$H_0 \Rightarrow \bar{x}$ lies in CI $\quad H_1 = \bar{x}$ does not lies in CI



★ Determine margin of error.

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

Lower Fence $\Rightarrow 520 - Z_{0.10}\left(\frac{100}{5}\right) = 520 - 1.29(20) = 494.2$

Higher fence $\Rightarrow 520 + 25.8 = 545.8$

★ We Accept Null hypothesis if $\bar{x}$ lies within 494.2 to 545.8

∴ we Accept null hypothesis with 80% CI.

Saathi

Date ___/___/_____

Q-3 A car company believes that the percentage of citizens in city ABC that owns a vehicle is 60% or less. A sales manager disagrees with this. He conducted a hypothesis testing surveying 250 residents & found that 170 residents responded yes to owning a vehicle.

a) State the null and alternate hypothesis.

b) At a 10% significance level, is there enough evidence to support the idea that vehicle owner in ABC city is 60% or less.

Solution Given $p = 0.60$ $q_0 = 0.40$

$\hat{p} = 0.68$ ~~$\alpha = 10\%$~~

$\alpha = 0.10$ ~~$\alpha = 0.90$~~ $CI = 90\%$.

Date __/__/____

Saathi

Q-4 What is the value of 99 percentile

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

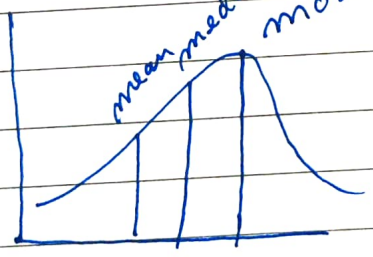
Ans-4 $\frac{99}{100} \times (20+1)$

$= \frac{99}{100} \times 21 = \frac{2079}{100} = 20.79$

99 Percentile $\Rightarrow$ 12

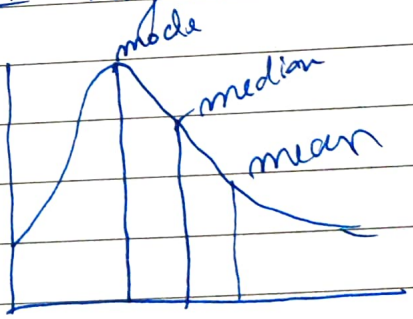
Q-5 In left & right skewed data, what is the relationship between mean, median & mode?

Ans (I) Left skewed



Relation $\Rightarrow$ mode > median > mean

II Right skewed.



mean > median > mode