7March Assignment

Q1.Three measure of central tendency are:-

Ans. The three measures of central tendency are the mean, median, and mode.

Q2.Difference between mean, median, mode are:-

Ans. The mean is the average of a set of numbers, calculated by adding all the numbers together and dividing by the total number of values.

The median is the middle value in a set of numbers when they are arranged in order.

The mode is the most frequently occurring value in a set of numbers.

The three measures of central tendency that are used to measure the central tendency of a data set are the mean, median, and mode.

- Mean: The mean is commonly used when the data is approximately normally distributed and does not have extreme outliers. It provides a measure of the "average" value in the dataset and is often used in various statistical calculations.
- Median: The median is useful when dealing with datasets that have outliers or are not normally distributed. It is a robust measure of central tendency that is not influenced by extreme values.
- Mode: The mode is valuable when identifying the most common or frequently occurring value in a dataset, particularly for categorical data. It can provide insights into the most prevalent category or group.

Q3.Mean
=178+177+176+177+178.2+178+175+179+180+175+178.9+176.2+177+172.5+178+176.5/16

= 177.01

median

179.5

Mode

177

Q4.Standard deviation = 13.304

Q5.

1. Range: It tells you how big the gap is between the smallest and biggest numbers in your data. For example, if you have temperatures ranging from 50°F to 90°F, the range is 40°F.
2. Variance: This is like an average of how far each number in your data is from the average (or typical) number. If the variance is high, it means your data points are spread out from the average by a lot. If it's low, they're close to the average.
3. Standard Deviation: Think of this as a measure of how much your data points tend to differ from the average. A high standard deviation means the numbers are all over the place from the average, while a low standard deviation means they're close to the average.

Q6.Venn Diagram:- A Venn diagram is **an illustration that uses circles to show the relationships among things or finite groups of things**.

Q7. 1. (2,6)

2.(0,2,3,4,5,6,7,8,10)

Q8.Skewness is **a measure of the asymmetry of a distribution**. A distribution is asymmetrical when its left and right side are not mirror images.

Q9.If the distribution of data is skewed to the left, the mean is less than the median, which is often less than the mode. If the distribution of data is skewed to the right, the mode is often less than the median, which is less than the mean.

Q10.**Both** covariance and correlation measure the relationship and the dependency between two variables. Covariance indicates the direction of the linear relationship between variables while correlation measures both the strength and direction of the linear relationship between two variables.

Q11.The general sample mean formula for calculating the sample mean is expressed as **$\bar{x}$=(Σ xi)÷ n**. Here, $\bar{x}$ denotes the average value of the samples or sample mean, xi refers all X sample values and 'n' stands for the number of sample terms in the given data.

Eg-*A teacher wants to find the average score for a student in his class. The teacher's sample set has seven different test scores: 78, 89, 93, 95, 88, 78, 95. He adds all the scores together and gets a sum of 616. He can use this sum in the next step to find his sample mean.*

Q12.Any normal distribution has a graph that is perfectly symmetric about a vertical line through its peak. Therefore, all measures of central tendency (most commonly, the mean, median, and mode) give the same answer: **the x -value of the peak**.

Q13.**Covariance indicates the direction of the linear relationship between variables. Correlation measures both the strength and direction of the linear relationship between two variables**.

Q14.Outliers are numbers in a data set that are vastly larger or smaller than the other values in the set. Mean, median and mode are measures of central tendency. **Mean is the only measure of central tendency that is always affected by an outlier**.