Student ID 13654

 **GENERAL ASSIGNMENT**

**SUMMER- 2020**

**Program: B.B.A (III)**

**Course Title: Basic Statistics**

**Instructor: Raza Ahmed Khan Total marks: 30**

**Important Instructions:**

 **Submitted Document’s format should be in word, pdf or in jpg.**

 No Assignment will be accepted after due date mentioned above.

 Attempt All Questions

**Question No: 01**

**Fill the following statements with appropriate words and options: (1- Each)**

1. Statistics is the word of Mathematical Analysis

2. Numbers deals with Numerical…. data

3. Ordinal study deals with natural order categories

4. classification/categorization is the process which categorize data in different groups.

5. Histogram which construct on behalf of discret or continous.data is called.

6. The grading score of ILETS belongs with ordinal measurement scale.

7. Peshawar temperature recorded at 32⁰ F is the example of nominal… scale.

8. Statistics has unlimited number of usage in advance research studies. (T)

9. Number of dots in a line is the relevant example of countable data. (F)

10. Non scale data do not belongs with the field of Statistics. (F)

**Question No: 02 (3+3)**

1. Differentiate between Descriptive & Inferential statistics with suitable examples.
* Descriptive statistics and inferential statistics

Inferential statistics takes data from a sample and makes inferences about the larger population from which the sample was drawn. Because the goal of inferential statistics is to draw conclusions from a sample and generalize them to a population, we need to have confidence that our sample accurately reflects the population. This requirement affects our process. At a broad level, we must do the following:

1. Define the population we are studying.
2. Draw a representative sample from that population.
3. Use analyses that incorporate the sampling error.
* Descriptive statistics describe a sample. That’s pretty straightforward. You simply take a group that you’re interested in, record data about the group members, and then use summary statistics and graphs to present the group properties. With descriptive statistics, there is no uncertainty because you are describing only the people or items that you actually measure. You’re not trying to infer properties about a larger population.

The process involves taking a potentially large number of data points in the sample and reducing them down to a few meaningful summary values and graphs. This procedure allows us to gain more insights and visualize the data than simply pouring through row upon row of raw numbers!

Common tools of descriptive statistics

Descriptive statistics frequently use the following statistical measures to describe groups:

Central tendency: Use the mean or the median to locate the center of the dataset. This measure tells you where most values fall.

Dispersion: How far out from the center do the data extend? You can use the range or standard deviation to measure the dispersion. A low dispersion indicates that the values cluster more tightly around the center. Higher dispersion signifies that data points fall further away from the center. We can also graph the frequency distribution.

1. Differentiate between Countable & Uncountable data with suitable examples.

ANS: (countable); (usually plural) Statistics are numbers about information.

New crime statistics that show the number of crimes is decreasing.

The government published new unemployment statistics for the month of June.

(uncountable) Statistics is the science of using and understanding those numbers.

To do research, it's important to understand simple statistics such as averages and standard deviations.

Statistics is a kind of mathematics.

**Question No: 03**

(4+6+4)

1. Elaborate the word Frequency Distribution precisely.

Ans:

In [statistics](https://en.wikipedia.org/wiki/Statistics), a **frequency distribution** is a list, table or graph that displays the frequency of various outcomes in a [sample](https://en.wikipedia.org/wiki/Sampling_%28statistics%29).[[1]](https://en.wikipedia.org/wiki/Frequency_distribution#cite_note-1) Each entry in the table contains the [frequency](https://en.wikipedia.org/wiki/Frequency_%28statistics%29) or count of the occurrences of values within a particular group or interval

Here is an example of a univariate (single [variable](https://en.wikipedia.org/wiki/Variable_%28mathematics%29)) frequency table. The frequency of each response to a survey question is depicted.

| [**Rank**](https://en.wikipedia.org/wiki/Ranking) | **Degree of agreement** | **Number** |
| --- | --- | --- |
| 1 | Strongly agree | 20 |
| 2 | Agree somewhat | 30 |
| 3 | Not sure | 20 |
| 4 | Disagree somewhat | 15 |
| 5 | Strongly disagree | 15 |

A different tabulation scheme aggregates values into bins such that each bin encompasses a range of values. For example, the heights of the students in a class could be organized into the following frequency table.

| **Height range** | **Number of students** | **Cumulative number** |
| --- | --- | --- |
| less than 5.0 feet | 25 | 25 |
| 5.0–5.5 feet | 35 | 60 |
| 5.5–6.0 feet | 20 | 80 |
| 6.0–6.5 feet | 20 | 100 |

A frequency distribution shows us a summarized grouping of data divided into mutually exclusive classes and the number of occurrences in a class. It is a way of showing unorganized data notably to show results of an election, income of people for a certain region, sales of a product within a certain period, student loan amounts of graduates, etc. Some of the graphs that can be used with frequency distributions are [histograms](https://en.wikipedia.org/wiki/Histogram), [line charts](https://en.wikipedia.org/wiki/Line_chart), [bar charts](https://en.wikipedia.org/wiki/Bar_chart) and [pie charts](https://en.wikipedia.org/wiki/Pie_chart). Frequency distributions are used for both qualitative and quantitative data.

Construction

1. Decide the number of classes. Too many classes or too few classes might not reveal the basic shape of the data set, also it will be difficult to interpret such frequency distribution. The ideal number of classes may be determined or estimated by formula: {\displaystyle {\text{number of classes}}=C=1+3.3\log n} (log base 10), or by the [square-root choice](https://en.wikipedia.org/wiki/Histogram#Square-root_choice) formula {\displaystyle C={\sqrt {n}}} where *n* is the total number of observations in the data. (The latter will be much too large for large data sets such as population statistics.) However, these formulas are not a hard rule and the resulting number of classes determined by formula may not always be exactly suitable with the data being dealt with.
2. Calculate the range of the data (Range = Max – Min) by finding the minimum and maximum data values. Range will be used to determine the class interval or class width.
3. Decide the width of the classes, denoted by *h* and obtained by {\displaystyle h={\frac {\text{range}}{\text{number of classes}}}} (assuming the class intervals are the same for all classes).

b) Construct an appropriate frequency distribution for the following data related to an experimental yield.

93, 89,75, 97,75,47, 73, 40, 100, 42, 39, 75, 13, 39, 89, 78, 32, 72, 51, 21, 92, 45, 29, 58, 16, 31, 6, 82, 76, 10, 10, 32, 2, 25, 98, 94, 93, 91, 68, 20, 19, 61, 37, 98, 72, 61, 72, 19, 81, 78.

One type of plot that can be used to organize sets of numbers by hand is a

**stem-and-leaf plot.** A set of test scores and the corresponding stem-and-leaf plot

are shown below.

*Test Scores*

93, 70, 76, 58, 86, 93, 82, 78, 83, 86,

64, 78, 76, 66, 83, 83, 96, 74, 69, 76,

64, 74, 79, 76, 88, 76, 81, 82, 74, 70

Note that the *leaves* represent the units digits of the numbers and the *stems*

represent the tens digits. Stem-and-leaf plots can also be used to compare two sets

of data, as shown in the following example.

c) Construct the followings about the Question 3 (b).

 Ogive curve & Histogram

An ogive (*oh-jive*), sometimes called a cumulative frequency polygon, is a type of [frequency polygon](https://www.statisticshowto.com/frequency-polygon/) that shows [cumulative frequencies](https://www.statisticshowto.com/cumulative-frequency-distribution/). In other words, the cumulative percents are added on the graph from left to right.

An ogive graph plots **cumulative frequency** on the y-axis and **class boundaries**along the x-axis. It’s very similar to a [histogram](https://www.statisticshowto.com/probability-and-statistics/descriptive-statistics/histogram-make-chart/), only instead of rectangles, an ogive has a single point marking where the top right of the rectangle would be. It is usually easier to create this kind of graph from a frequency table.

How to Draw an Ogive Graph

**Example question:** Draw an Ogive graph for the following set of data:
02, 07, 16, 21, 31, 03, 08, 17, 21, 55
03, 13, 18, 22, 55, 04, 14, 19, 25, 57
06, 15, 20, 29, 58.

Step 1: Make a [relative frequency table](https://www.statisticshowto.com/relative-frequency-distribution/) from the data. The first column has the class limits, the second column has the frequency (the count) and the third column has the relative frequency (class frequency / total number of items):


The End