NOTE: Do all questions in this assignment manually. All work must be your **OWN**. Show each step for **FULL** credit. Your work should be **WELL ORGANIZED** and IN **SEQUENCE**.

1. What is the importance/significance of Statistics in your field of study. Write down atleast 5 examples of each type of variable. Compare the Interval and Ratio scale of measurement with the help of examples.

2. Following data represents the blood groups of 12 blood donors at hospital on a certain day along with there sex. Tabulate the data and find row as well as column percentages and interpret your

Blood Groups	O+	O+	B+	B+	O+	AB+	AB+	O+	AB+	B+	AB+	O+
Sex	M	F	M	F	M	M	M	F	F	M	M	F

   results. Make an appropriate graph to show the data graphically.

3. Following are the number of flowers on different branches of a tree. Construct frequency distribution and appropriate graph of the data.

2	4	6	1	3	3	5	7	8	6	4	7	6	4
4	2	1	5	0	5	9	9	10	3	6	4	2	5
7	9	6	1	2	10	4	8	9	2	3	1	0	4
10	1	1	2	2	2	3	4	4	4	6	6	5	5
4	5	8	5	4	3	3	2	1	8	6	9	10	

4. Write the following sums in expanded form.
   (i) $\sum_{i=1}^{5} X_i$ (ii) $\sum_{m=4}^{6} W_{m+2}$ (iii) $\sum_{i=2}^{5} X_i^2$ (iv) $\sum_{i=1}^{6} 100$ (v) $\left(\sum_{i=1}^{5} X_i + 2\right)^2$ (vi) $\sum_{i=1}^{n} Y_i$ (vii) $\sum_{i=1}^{n} Y_i^2$ (viii) $\sum_{i=1}^{7} (X_i - Y_i)$ (ix) $\sum_{i=1}^{4} \frac{X_i}{4}$.

5. Consider a following data on variable X_i and Y_i:

X_i	3	5	7	9	11	13	15
Y_i	2	4	6	8	10	12	14

   Then calculate the values of the following expressions. Show each step.(i) What is the sample size for the above data? (ii) $\sum_{i=1}^{7} X_i$ (iii) $\sum_{i=1}^{7} Y_i$ (iv) $\sum_{i=1}^{7} (X_i + Y_i)$ (v) $\sum_{i=1}^{7} {X_i}^2$ (vi) $\sum_{i=1}^{7} {Y_i}^2$ (vii) $\frac{(\sum_{i=1}^{7} X_i)}{(\sum_{i=1}^{7} Y_i)}$ (viii) $\prod_{i=1}^{7} X_i$ (ix) $\prod_{i=1}^{7} Y_i$ (x) $(\prod_{i=1}^{7} X_i)^{1/7}$ or $\sqrt[7]{\prod_{i=1}^{7} X_i}$ (xi) $\sum_{i=1}^{7} (\frac{1}{X_i})$ (xii) $\frac{n}{\sum_{i=1}^{7} (\frac{1}{X_i})}$

6. Make a frequency distribution from the following data, relating to the wieght recorded to the nearest grams of 60 apples picked out at random from a consignment.

106	107	76	82	109	107	115	93	187	95	123	125
111	92	86	70	126	68	130	129	139	119	115	128
100	186	84	99	113	204	111	141	136	123	90	115
98	110	78	185	162	178	140	152	173	146	158	194
148	90	107	181	131	75	184	104	110	80	118	82

   (a) (i) Construct frequency distribution, Class boundaries, Midpoints, Cumulative frequency, relative frequency, percentage frequency, relative cumulative frequency, percentage cumulative frequancy.(ii) Also construct histogram, a freqency polygon, frequency curve and an ogive.

(b) Construct a stem-and-leaf plot using one row per stem.

7. The following data specifies the life of 40 similar car batteries recorded to the nearest tenth of a year. The batteries are guaranteed to last 3 years.

2.2	4.1	3.5	4.5	3.2	3.7	3.0	2.6	3.4	1.6	3.1	3.3	3.8	3.1
4.7	3.7	2.5	4.3	3.4	3.6	2.9	3.3	3.9	3.1	3.3	3.1	3.7	4.4
3.2	4.1	1.9	3.4	4.7	3.8	3.2	2.6	3.9	3.0	4.2	3.5		

(a) Prepare a frequency distribution, using a class interval of 0.5. Indicate the class limits and class boundries clearly.

(b) Construct Midpoints, Cumulative frequency, relative frequency, percentage frequency, relative cumulative frequency and percentage cumulative frequancy.

(c) Draw a histogram, freqency polygon, frequency curve and an ogive.

8. (a) Represent the following data with the help of (i) Simple Bar Chart (ii) Multiple Bar Chart (iii) Pie Chart.

Country	Japan	Germany	Egypt	France
Birth Rate	32	16	44	21
Death Rate	19	10	24	16

(b) Draw a pie chart to show the distribution of punjab government Employees by their academic qualifications.

Qualification	No Edu	Primary	Middle	Matric	Intermediate
No. of Employees	47	25	63	97	26

9. (a) The following data are the measures of the diameters of 12 rivet heads in 1/100 of an inch. 6.72, 6.77, 6.82, 6.70, 6.78, 6.70, 6.62, 6.75, 6.66, 6.66, 6.64 and 6.76
Compute the Arithmetic Mean, variance, standard deviation, Coefficient of Variation, Coefficient of Skewness and Coefficient of Kurtosis..

(b) The mean of the 10 numbers is 8. If an eleventh number is now included in the results, the mean becomes 9. What is the value of the eleventh number.

(c) For three sections of a statistics class consisting of 62, 68 and 40 students, the mean grades on the final examination were 83, 80 and 76. Find the mean of the combined class.

(d) In an examination a candidate scored the marks as English 73, Urdu 62, Mathematics 57, Statistics 82, Economics 60. Find (i) the simple average of the marks obtained, (ii) the wieghted mean if the weights of 1,1,2,3,3 respectively are assigned to these subjects.

10. Find the median, Q_1, Q_3, D_7, P_{35} and mode of each of the following sets of data:-

(a) 27, 29, 27, 25, 24, 27, 25, 29, 28, 23, 30, 26, 25, 23, 24, 19, 20, 30

(b) 412, 426, 435, 412, 427, 428, 435, 436, 437, 440, 417, 415, 420, 421

Also construct box plot for both the above data sets.

11. The following measurements were recorded for the drying time, in hours, of a certain brand of latex paint. 3.4, 2.5, 4.8, 2.9, 3.6, 2.8, 3.3, 5.6, 3.7, 2.8, 4.4, 4.0, 5.2, 3.0, 4.8
Assume that the measurements are a simple random sample. (i) What is the sample size for the above sample? (ii) Calculate the sample mean for these data. (iii) Calculate the sample median. (iv) Calculate variance, standard deviation, Coefficient of Variation, Coefficient of Skewness and Coefficient of Kurtosis.

Best of Luck!