Assignment 02

1. There are three groups of people have average earnings $\$\mathbf{150}$, $\$\mathbf{170}$ & $\$\mathbf{140}$ respectively. If the first two groups contain $\mathbf{17}$ & $\mathbf{12}$ people respectively and the combined average of earnings is $\$\mathbf{153.25}$, find the number of people in the last group.

2. In a certain factory there are four working groups and they need $\mathbf{3}$, $\mathbf{4}$, $\mathbf{5}$ and $\mathbf{2}$ hours per product to make. What is the approximate average time required to make a product by those groups?

3. Let the class marks of a certain population table are $\mathbf{17}$, $\mathbf{22}$, $\mathbf{27}$, $\mathbf{32}$ & $\mathbf{37}$ and the corresponding frequencies are $\mathbf{9}$, $\mathbf{13}$, $\mathbf{8}$, $\mathbf{10}$ & $\mathbf{15}$.

(i) Construct the original classes.
(ii) Draw the histogram.
(iii) Find the mode graphically.

4. Consider the following classes.

Class	43-47	48-52	53-57	58-62	63-67
Frequency	9	8	12	6	15

(i) Sketch the histogram and derive frequency polygon from it.
(ii) Sketch the Pie chart.
(iii) Find the cumulative frequency polygon. Hence, locate the $\boldsymbol{D_7}$ and $\boldsymbol{Q_1}$.
(iv) Evaluate $\boldsymbol{Q_3}, \boldsymbol{Me}, \boldsymbol{D_7}, \& \boldsymbol{P_{87}}$ from the cumulative frequency polygon.
(v) Find the Mode and mean deviation from the mode.
(vi) Find the harmonic and geometric mean.
(vii) Find the standard deviation and its coefficient.

5. If the mode of a certain frequency table is $\mathbf{65.5}$ and the lower limit of the modal class is $\mathbf{60.5}$ with the class size $\mathbf{10}$, find the frequency of the modal class. Here frequency difference of the modal class and pre-modal class is $\mathbf{7}$ and frequency of post-modal class is $\mathbf{14}$.

6. If the standard deviation of a frequency table is $\mathbf{3.6}$ and coefficient of standard deviation is $\mathbf{6.55}\%$, find the arithmetic mean of that table.

7. Suppose the first four raw moments of a population are -3.7, 94, -547.2 & 1200 respectively.

(i) Find the first four central moments.

(ii) Estimate the coefficient of skewness and kurtosis.

(iii) Comment about your findings.

(iv) Show your result graphically.

8. If the correlation coefficient of two variables is 0.65 and regression coefficient of y on x is 1.68. Also, $\bar{x} = 32.3$ and $\bar{y} = 45.6$.

(i) Find the regression coefficient of x on y.

(ii) Find and sketch the regression line x on y.

(iii) Predict the value of x when y is 52. Also, verify your result graphically.

9. If the correlation coefficient of x & y is 0.75 and the corresponding standard deviations 1.25 & 1.75. Find the regression coefficient of y on x and x on y.

10. For the following data, find the correlation co-efficient. How much x depends on y? Determine and sketch the corresponding regression line. Graphically find the value of x when $y = 15$.

x	5	12	18	23	27	30	26	22
y	18	16	13	11	9	7	10	13