Answer FIVE questions taking at least 1 (one) from each group. Figures in the right indicate full marks.

Group A

1. **Call duration of 6 calls in a customer care center are**

$$2, 2.5, 1.5, 5, 6, 3$$

   (a) What is a sample?   1

   (b) Are all quantitative variables continuous?   2

   (c) Determine $\sum_{i=1}^{7}(x_i - 3)^3$ 3

   (d) Find the values of $\sum_{i=1}^{7}(x_i - 5)^2$ and $\sum_{i=1}^{7} x_i^2 + 5$.   4
   Explain mathematically why they are unequal.

2. **For a particular data set, Median = 120, Mode = 110, Standard Deviation = 4, and Coefficient of Variation (CV) = 3.2**

   (a) Why is CV used?   1

   (b) Find arithmetic mean..   2

   (c) Find skewness according to Pearson's method (SK_P) 3

   (d) Does (SK_P) convey the proper idea about the data as to the given information? Justify.   4

3. **Below are some information**

$$x_1 = 3, x_2 = 4, x_3 = 1, x_4 = 0$$
$$y_1 = 1, y_2 = 5, y_3 = 0, y_4 = 2$$

   (a) What is a qualitative variable?   1

   (b) Find $\sum_{i=1}^{4} x_i^2$ 2

   (c) Prove that $\sum_{i=1}^{4}(x_i + y_i) = \sum_{i=1}^{4} x_i + \sum_{i=1}^{4} y_i$ 3

   (d) Find the value of $\sum_{i=1}^{4} x_i y_i - \sum_{i=1}^{4} x_i + 4$ 4