

[**N.B.** – The figures of the right margin indicate full marks. Read the stems carefully and answer the associated questions. Answer any **FIVE** questions taking at least two questions from each group]

1. **An analyst obtains some data:**

$$x_1 = 15, x_2 = -12, x_3 = 17, x_4 = 11, x_5 = 23$$

- (a) What is sample?

1
- (b) Briefly explain shift or origin and scale.

2
- (c) Compute the value of $\sum_{i=1}^5 (x_i - 10)^2$

3
- (d) Find the value of $\sum_{i=1}^5 (5x_i^2 - 4x_i - 3)$ and examine its dependency on origin and scale.

4

2. **Favorite colors of 30 individuals are noted down. There are five different colors. The recorded colors are given below:**

Brown Red Pink Green Green Green Brown Pink Brown Red
Brown Red Green Pink White Red Brown Green White Brown
White Brown Pink Red White Brown Green Red Pink Red

- (a) What is nominal data?

1
- (b) What are the ways to deal with categorical data?

2
- (c) Draw a Pie Chart from the above data and explain.

3
- (d) Is Bar Diagram a better representation of this data? Justify.

4

3. **Grades of a an undergraduate student with major in statistics are given below:**

[Credits serve as weights]

Course	Grade	Credit
Probability	3.75	4
Simulation	3.50	3
Calculus	3.50	4
Linear Algebra	3.75	4
Econometrics	3.00	2
Programming	3.50	3

- (a) Write down the formula of weighted mean.

1
- (b) What is difference between weight and frequency?

2
- (c) Determine the GPA of the student.

3
- (d) Determine the geometric mean for the data and evaluate suitability.

4

Absence of evidence is not evidence of absence. – Carl Sagan