Polaris

MYMENSINGH GIRLS' CADET COLLEGE
YEAR FINAL EXAMINATION - 2025
CLASS: XI
STATISTICS (CREATIVE)
FIRST PAPER
[According to the Syllabus of 2026]
TIME – 2 hours & 35 minutes
FULL MARKS – 50

Subject Code:	1	2	9

[**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]

Group - A

1. **A system analyst collected frequencies of a signal at different times. Then he realized due to some unknown noise, 0.5 units got added to all the values. The recorded values are given below:**

10, 12, 15, 14, 12, 16, 20, 16, 18, 11

(a) What is change of origin? 1

(b) Does change of origin have an effect on median? 2

(c) Find $\sum_{i=1}^{10}(X_i - 5)$. 3

(d) Determine the summation of the values discarding the noise. 4

2. **Some of the most-searched key words on the web by the employees of a social media research firm are:**

Facebook, Google, YouTube, Facebook, Facebook, YouTube, Weather,
YouTube, Gmail, YouTube, Facebook, YouTube, Google, YouTube,
Gmail, Weather, Gmail, Gmail, YouTube, Facebook, YouTube,
Gmail, Facebook, YouTube, Facebook

(a) What is most popular key word in the stem? 1

(b) Differentiate between primary and secondary data. 2

(c) Draw a Bar Chart from the above data and explain. 3

(d) Is a Pie Chart a better representation of this data? Justify. 4

3. **Frequency distribution of marks in statistics of a college is given in the following table.**

Marks	Number of Students Group - A	Number of Students Group - B
25-30	11	10
30-35	18	16
35-40	21	22
40-45	26	28
45-50	14	9

(a) When is Median a better measure of central tendency than Arithmetic Mean? 1

(b) Derive the formula of the combined arithmetic mean. 2

(c) Calculate the arithmetic mean of Group - A 3

(d) Compute the combined mean. Is it greather than the arithmetic mean of Group - B? Explain the possible reason(s). 4

4. **Temperatures of two cold regions for five days are as below:**

City A: 2, 1, -1, 0, 3
City B: 3, 0, -2, 2, 3

(a) What is standard deviation? 1

(b) Is standard deviation of a set of negative values negative? Justify mathematically. 2

(c) Find Mean Deviation about mean of the values of city A. 3

(d) Which city has more consistent weather? Verify statistically. 4

Group - B

5. **The first four moments around 4 of productions of a company over four years are -1.5, 17, -30, and 108.**

   (a) What is skewness? 1

   (b) Can the second central moment be negative? 2

   (c) Determine the second and third central moments. 3

   (d) What kind of kurtosis do the data have? 4

6. **There has been an increase in average lifetime of people of Bangladesh. To get more insight on this, a research was conducted, in which ages of retired government employees were recorded. A sample of 10 people is given below:**

   75, 62, 63, 72, 66, 76, 59, 77, 70, 79

   (a) What is the 2nd central moment equal to? 1

   (b) Show that the first central moment is zero. 2

   (c) Find the variance of the data. 3

   (d) Are the data symmetric? Justify. 4

7. **The temperature (in ^{o} Celsius) and rainfall (mm) in the city of Mymensingh on the last 6 raining days are summarized as below (temperature is denoted by X and rainfall by Y):**

   $$\sum x = 29, \sum y = 38, \sum xy = 205, \sum x^2 = 167, \sum y^2 = 282$$

   (a) What is covariance? 1

   (b) Differentiate between cvariance and correlation. 2

   (c) Analyze the linear association between temperature and rainfall. 3

   (d) Find the degree of impact of temperature on rainfall. 4

8. **The classification of published statistics is essential for organizing data into meaningful categories. This helps in better understanding and utilization of the data for research and policy-making.**

   (a) What does BBS stand for? 1

   (b) Differentiate between official and non-official statistics. 2

   (c) Explain the classification system used for published statistics in Bangladesh. 3

   (d) Evaluate the effectiveness of this classification system in meeting the needs of researchers and policy-makers. 4