Polaris

SYLHET CADET COLLEGE
YEAR-FINAL EXAMINATION - 2025
CLASS: XI
STATISTICS (CREATIVE)
FIRST PAPER
[According to the Syllabus of 2025]
TIME – 2 hours & 25 minutes
FULL MARKS – 50

Ques Setter	
Moderator	
VP	

Subject Code: | 1 | 3 | 0 |

[**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 botanist is measuring the heights (in centimeters) of four seedlings after one week. The observed heights are:**

$$h_1 = 15, h_2 = 12, h_3 = 18, h_4 = 10$$

(a) Compute the value of $\sum_{i=1}^{4}(h_i - 14)^2$. 3

(b) Calculate $\sum_{i=1}^{4}(3h_i^2 - 2h_i + 1)$ using both a direct approach and by splitting the summation terms. Also demonstrate that they are mathematically equivalent. 4

2. **Scores of four athletes in different events at a track meet are recorded below:**

Event	High Jump	Long Jump	Shot Put	Javelin Throw
Score	8.5	7.2	12.8	55.5
Difficulty Factor	2	3	2.5	1.5

A coach believes that events with higher difficulty factors should contribute more to the overall ranking and suggested a new weighting where the weight for each event is the square of its difficulty factor.

(a) Write down the formula of weighted mean. 1

(b) What is difference between weight and frequency? 2

(c) Calculate the weighted average score of the athletes across all four events. 3

(d) If the coach's suggestion is implemented, would the mean be shifted upward or downward? Show mathematically and empricially. 4

Group - B

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

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

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

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

"Quote"
– Author