



'সমানো মন্ত্র: সমিতি: সমানী'

UNIVERSITY OF NORTH BENGAL
B.Sc. Honours 3rd Semester Examination, 2023

GE2-P1-STATISTICS
STATISTICAL METHODS

Time Allotted: 2 Hours

Full Marks: 40

The figures in the margin indicate full marks.

GROUP-A

1. Answer any **five** questions from the following: 1×5 = 5
- What is statistics?
 - What is frequency distribution?
 - What is ogive?
 - What is raw moment?
 - What is the formula for coefficient of variation?
 - What is scatter diagram?
 - Find the mean of the 1st n natural numbers.
 - What is standard deviation?

GROUP-B

2. Answer any **three** questions from the following: 5×3 = 15
- Prove that $-1 \leq r \leq 1$.
 - Calculate the mean deviation of the following data about median.

x	2	3	4	5	6	7
y	9	20	30	17	10	4

- Discuss the comparison among mean, median and mode.
- Prove that correlation co-efficient is the geometric mean between the two regression co-efficients.
- A group of 100 items has mean 60 and variance 25. If the mean of the 1st 50 items is 61 and S.D. is 4.5, find the mean and S.D. of the other 50 items.

GROUP-C

3. Answer any **two** questions from the following: 10×2 = 20
- What is central moments? Establish the relation "central moments expressed in terms of moments about an arbitrary origin". From this relation, find m_1 , m_2 , m_3 and m_4 .

- (b) (i) Prove that the magnitude of correlation coefficient r does not depend on any changes in origin or scale.
- (ii) Prove that $\beta_2 \geq \beta_1$.
- (c) What do you mean by regression coefficient of x on y and y on x ? Out of two regression lines given by $x + 2y = 5$ and $2x + 3y = 8$, which one is the regression line of x on y ? Find also the values of \bar{x} , \bar{y} , r and $\sigma^2 y$, given $\sigma^2 x = 12$.
- (d) (i) What is Kurtosis? What is the measure of Kurtosis? Explain.
- (ii) Find the geometric mean of the series $1, 2, 4, 8, 16, \dots, 2^n$.

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