

Sylhet Cadet College
Model Test Examination - 2022

Class: XII

Subject: Statistics First Paper (Creative)

Time: 1 hour & 40 minutes

Subject Code: 129

Full Marks: 30

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

Group A

1. Mean monthly salaries of employees of two companies A & B are tk. 65,000 and tk. 75,000. The combined arithmetic mean (AM) is tk. 71,000 and number of employees in the company A is 20.

- (a) Write down the formula of combined AM for n groups. 1
- (b) What is the combined AM of two data sets with AM 35 and 45 and number values equal? 2
- (c) How many employees are there in the company B? 3
- (d) Question 4

2. A departmental store records their sales. An analysis of products with prices less than tk. 30 generates the following table.

| Price | 0-5 | 5-10 | 10-15 | 15-20 | 20-25 | 25-30 |
|-----------|-----|------|-------|-------|-------|-------|
| Frequency | 1 | 0 | 2 | 3 | 8 | 12 |

- (a) What is relative frequency? 1
- (b) If $Y = a + bX$, $\bar{Y} = ?$ 2
- (c) Find 67th Percentile and 3rd Quartile and explain. 3
- (d) Is AM or Median more suitable for this data? Elucidate. 4

3. Statement

- (a) Question 1
- (b) Question 2
- (c) Question 3
- (d) Question 4

4. Statement

- (a) Question 1
- (b) Question 2
- (c) Question 3
- (d) Question 4

Group B

5. Marks obtained by a student in 7 subjects are

70, 66, 55, 45, 80, 30, 82

- (a) What is negative skewness? 1
- (b) Draw graphs of positive and negative skewness showing the locations of mean and median. 2
- (c) Determine the five number summary from the stem and explain. 3
- (d) Are the data symmetric? If not, comment on the pattern of data. 4

6. Goals scored by Karim Benzema in five seasons are recorded to be the following:

- (a) What is a quantitative variable? 1

| Season | La Liga (x) | Uefa Champions League (y) |
|---------|-------------|---------------------------|
| 2017-18 | 5 | 5 |
| 2018-19 | 21 | 4 |
| 2019-20 | 21 | 5 |
| 2020-21 | 23 | 6 |
| 2021-22 | 27 | 15 |

(b) What is the notation to denote his total number of goals? 2

(c) Compute $\sum_{i=1}^5 (y_i - 3)^2$

(d) Find total number of goals using two different notations and examine whether they match. 4

7. **Given below is a series of data.**

$$5, 7, 9, \dots, 123$$

(a) What is the summation of natural numbers up to nth value? 1

(b) Find the arithmetic mean of natural numbers from 1 up to 20. 2

(c) Find the arithmetic mean of the given series. 3

(d) Prove that arithmetic mean is greater than geometric mean theoretically and empirically. 4

8. **In ODI cricket, two top batsmen are (as of 2nd Sept, 2022) Babar Azam and Rassie van der Dussen. Their average (arithmetic mean) scores are 59.79 and 69.32, appearing in 90 (including being not out in 12 occasions) and 33 (including being not out in 11 occasions) matches, respectively.**

(a) When is arithmetic mean inappropriate to use? 1

(b) Is arithmetic mean always suitable for comparison? 2

(c) Find the combined arithmetic mean and explain. 3

(d) How to compare two sets of data having significantly distinct ranges? 4