Question Bank
Subject: Statistics First Paper (Creative)

Group A

1. **Income and expenditure (both in thousands) of some individuals are collected:**

Income (x)	20	30	25	10
Expenditure (y)	15	27	18	5

    (a) What is a discrete variable?   1

    (b) Can fractional numbers be discrete? Explain briefly.   2

    (c) Are, in the stem, $\sum_{i=1}^{n}\sum_{i=1}^{n} x_i y_j = \sum_{i=1}^{n} x_i y_i$? Show statistically.   3

    (d) Prove empirically that sum of square is unequal to square of sum of numbers.   4

2. **In the test examination, marks of 11 students in statistics are**
   90, 92, 93, 49, 44, 88, 80, 58, 83, 71, 76.

    (a) What is central tendency?   1

    (b) When is median better than arithmetic mean? Explain with an example.   2

    (c) Find the 3rd the quartile and 61st percentile from the data and explain.   3

    (d) Do quantiles depend on change of origin and scale. Prove using two examples.   4

Group B

3. **US Dollar exchange (to taka) in Bangladesh since 1980 to 2005 (after each 5 years) were:**
   16, 31, 36, 40, 52, 64

    (a) What are moments?   1

    (b) Which moment is equal to the variance? Show mathematically.   2

    (c) Find, from the stem, the first and second raw moments about 1.   3

    (d) Find skewness and kurtosis of and explain.   4

4. **GDP (in bn. US$ PPP) of Bangladesh since 1980 to 1985 according to an estimate**
   of International Monetary Fund: 41.2, 47.4, 52.0, 56.5, 61.0, 65.3

    (a) What is time series data?   1

    (b) What are the components of a time series model?   2

    (c) Determine the 3-yearly moving average from the data.   3

    (d) Find trend of the data using another method (other than (c)), plot both, and comment
   which is better.   4