

M.Sc(Environmental Sci.) Semester - 1 (CBCS) Examination**Nov/Dec-2023****Statistics and Computational Application****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1 Answer the following (Any seven out of Ten, each of 02 marks) (14)

- (1) Calculate Mean, Mode, Median and Range from **1,7,0,13,18,7** data
- (2) Write any two merits and demerits of the mean
- (3) What is difference between paired and unpaired student's t test?
- (4) Write note on Line graph with suitable example
- (5) What is difference between null hypothesis and alternative hypothesis?
- (6) Define the environment health?
- (7) Why Microsoft excel important for environment studies?
- (8) What is Environmental systems analysis? Define.
- (9) What is eigen value? Define.
- (10) What is screen plot.

Que.2 Answer the following (Any two out of three, each of 07 marks) (14)

- (1) Describe any seven types of Graph with suitable example.
- (2) Calculate the Coefficient of Variation (CV) for the following two sample data sets and give your interpretation from results.
 - a. Ecology. 13, 21, 27, 31, 35, 24, 28, 32, 17, 20.
 - b. Environment. 100, 115, 112, 113, 95, 87, 90, 104, 107, 98.
- (3) Find variance and standard deviation of the five highest mountains peak on Earth.
[Mount Everest](#) 8,848m, K2 8,611m [Kangchenjunga](#) 8,886m, [Lhotse](#) 8,516m and [Makalu](#) 8,485m.

Que.3 Answer the following (Any two out of three, each of 07 marks) (14)

- (1) Write a detail note on the analysis of variance.
- (2) Write a detail note on Regression
- (3) What is the Chi-square test? Discuss in detail.

OR

Que.3 Answer the following (1 & 2 – Both are compulsory, each of 07 marks) (14)

- (1) Based on field experiments, a new variety green gram is expected to give a yield of 12.0 quintals per hectare. The variety was tested on 10 randomly selected farmers' fields. The yields (quintals/hectare) were recorded as **14.3, 12.6, 13.7, 10.9, 13.7, 12.0, 11.4, 12.0, 12.6, and 13.1**. Do the results confirm the expectation? (use 2.262 t critical/table value)

- (2) Write a note on Student's T-test? Discuss paired student's T-test with below data (use 1.833 t critical/table value)

Student: 1 2 3 4 5 6 7 8 9 10

Pre module score: 11 21 19 22 19 24 18 21 23 19

Post module score: 15 25 20 24 16 29 21 23 19 21

Que.4 Answer the following (Any two out of three, each of 07 marks) (14)

- (1) Describe the principal component analysis with suitable example
- (2) Discuss the basics and application of Factor analysis.
- (3) Discuss the correlation coefficient in details and write its steps while calculate it in MS Excel.

Que.5 Answer the following (Any two out of three, each of 07 marks) (14)

- (1) Discuss the predator prey equation in detail.
- (2) Discuss the approaches for development of models and how they help to interpret the data.
- (3) Write note on environmental system analysis.
