INDIAN STATISTICAL INSTITUTE
FOURTH SEMESTER EXAMINATION, 2021/23 SESSION
PAPER - 21: GEOGRAPHICAL INFORMATION SCIENCE (ELECTIVE)
(MASTER IN LIBRARY INFORMATION SCIENCE)
02nd May 2023 (10:00-13:00) (3 Hours)

This Question paper consists of one page. **Attempt Any Four Questions.** Please print all your answers in the Answer Booklet provided. Scientific Calculator is allowed.

QUESTION 1. Write briefly about
    (i) Geographical Information Science (GISci)   **[3 marks]**
    (ii) Location Significance Index   **[3 marks]**
    (iii) Morphological Dilation and Erosion distances   **[3 marks]**
    (iv) Kriging   **[3 marks]**
    (v) Cartogram   **[3 marks]**

QUESTION 2. Explain Spatial Auto-Correlation computation via Moran's Index, and its role in GISci. **[15 marks]**

QUESTION 3. Explain binary and grayscale morphological interpolation with the support of equations, algorithms and illustrations and its role in GISci. **[15 marks]**

QUESTION 4. Explain Skeletonization of Zones of Influence (SKIZ) and Weighted SKIZ with the support of equations, algorithms and illustrations, and their use in GISci. **[15 marks]**

QUESTION 5. Explain the involvement of asymmetric distances between (X^i) and (X^j), and their use in strategic location identifications with the support of equations, algorithms and illustrations. **[15 marks]**

QUESTION 6. Write elaborately about network morphometric analysis, and the two important topological quantities that could be computed via Horton's laws of numbers and mean lengths. **[15 marks]**

END OF PAPER