

INDIAN STATISTICAL INSTITUTE
THIRD SEMESTER EXAMINATION, 2019/21 SESSION
PAPER - 13: INFORMATION STORAGE, RETRIEVAL AND DBMS
(MASTER IN LIBRARY INFORMATION SCIENCE)
14th December 2020 (10:00-13:00) (3 Hours)

This Question paper consists of one page. **Attempt Questions and/or Sub-Questions to score maximum of 60 marks.** Please print all your answers in the Answer Booklet provided. Scientific Calculator is allowed.

QUESTION 1. Write briefly about

- (i) Inverse Document Frequency (IDF) [4 marks]
- (ii) Delimiter Space and it's geometric significance [4 marks]
- (iii) Information dimension computation via multifractal spectra [6 marks]
- (iv) What is the role of histogram in the data thresholding? [6 marks]

QUESTION 2. Write briefly about the importance of quantitative description of the delimiter space in the context of document information retrieval. Rectangular Granulometries is a technique to quantify the geometric complexity of such a delimiter space that appears on the first-pages of technical periodicals. Explain how the geometry of such delimiter space could be quantitatively characterized via rectangular granulometries. [15 marks]

QUESTION 3. Explain with details of each and every term involved in probabilistic approach based K-Mixture Model that is popular in automatically summarizing the documents. [10 marks]

QUESTION 4. Explain the following three morphology-based interpolations with the support of illustrations and equations. [15 marks]

- a. Skeletonization by Influence Zones (SKIZ), and Weighted SKIZ
- b. Binary Morphological Median
- c. Grayscale Morphological Median Function

Explain under what situation one employs the following morphological interpolations?

[8 marks]

QUESTION 5. Write a simple morphology-based algorithm to compute the ranks for pairing the three spatial fields with the similar size configurations **such as f^1 , f^2 , and f^3 .** [12 marks]

END OF PAPER