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|  | Continuous Assessment Test- I [CAT - I] | |
| Year | : IV |
| Semester | : VIII |
| Branch | : B.E/B.Tech. – CSE A |
| Sub. Code | : CO8080 |
| Subject Name | : INFORMATION RETRIEVAL TECHNIQUES |
| QP Code | : (To be filled by exam cell) |

*[Regulations 2021]*

**Date: Time: 120 Min Marks: 60**

**Answer ALL Questions**

**Part A [2 x 2 = 4 Marks]**

|  |  |  |  |
| --- | --- | --- | --- |
| 1.1 | Compare data retrieval and information retrieval, highlighting their key differences in terms of purpose, focus, and outcome | **[A2]** | **CO1** |
| 1.2 | Identify the key components of a search engine, outlining the performance metrics associated with each component | **[A2]** | **CO1** |

**Part B [2x13=36 Marks]**

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| 1.3 | a | Converse the operational framework of an Information Retrieval (IR) architecture. Also, analyze the significance of designing parsing and scoring functions within this architecture, elucidating their roles in enhancing search effectiveness and relevance. | **[B1]** | **CO1**  **CO1** |
|  | **[OR]** | |  |  |
|  | b | Elaborate on the framework of an open-source search engine, incorporating essential components and interactions. Also, discuss the significance of utilizing open-source solutions in search engine development, highlighting key advantages and potential challenges. | **[B1]** | **CO1** |
| 1.4 | a | Discuss the various categories of computer software utilized in computer architecture, elaborating on their functions and significance within the system. Discuss the interplay between these software types and hardware components, highlighting how they collectively contribute to the operation and functionality of a computer system. | **[B2]** | **CO1**  **CO1** |
|  | **[OR]** | |  |  |
|  | b | Analyze the multifaceted role of Artificial Intelligence (AI) within information retrieval systems. Begin by deconstructing the components of an information retrieval system and identifying areas where AI technologies are integrated. Evaluate the specific AI techniques, such as natural language processing, machine learning algorithms, and deep learning models, utilized to enhance search accuracy, relevance, and user experience. | **[B2]** | **CO1** |

**Answer ALL Questions**

**Part A [2 x 2 = 4 Marks]**

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| 2.1 | Specify the advantages and limitations of Zone Indexing compared to traditional indexing methods, considering factors such as query performance, scalability, and resource utilization. | **[A1]** | **CO2** |
| 2.2 | State the classes of retrieval models by categorizing and summarizing their key characteristics | **[A1]** | **CO2** |

**Part B [2x13=36 Marks]**

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| 2.3 | a | Design an instructional guide to illustrate the Vector Space Retrieval Model comprehensively, integrating theoretical principles with practical examples. | **[B2]** | **CO2** |
|  | **[OR]** | |  |  |
|  | b | Demonstrate your understanding of the Binary Independence Model (BIM) for probability ranking principles by applying its concepts to a practical scenario | **[B2]** | **CO2** |
| 2.4 | a | Elucidate the basic concepts of cosine similarity, elucidating its principles and underlying mathematical framework. Begin by deconstructing the definition of cosine similarity and its significance in measuring the similarity between two vectors in a multi-dimensional space | **[B1]** | **CO2** |
|  | **[OR]** | |  |  |
|  | b | Outline the searching process in an inverted file system, reviewing its components and exploring their interactions. Begin by breaking down the structure of an inverted file, including the index and the postings list. | **[B1]** | **CO2** |

**Prepared by**

**Course Coordinator Expert Member HOD/ECE**