Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – MAY 2025

Date: 23-05-2025 **Time:** 01:00 pm –04:00 pm

School: SOIS	**Program:** BCI	
Course Code: CSA2102	**Course Name**: Information Retrieval	
Semester: IV	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4
Marks	26	26	24	24

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part - A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	Explain the Information Retrieval (IR) problem. What are the primary challenges faced with solving this problem?	2 Marks	L2	CO1
2.	Discuss the three main components of an IR system.	2 Marks	L2	CO1
3.	Explain the purpose of modularity in the software architecture of an IR system?	2 Marks	L2	CO1
4.	Explain the Boolean model in Information Retrieval with an example and write the advantages and limitations.	2 Marks	L2	CO2
5.	Summarize the probabilistic model in information retrieval.	2 Marks	L2	CO2
6.	Define the Boolean model in Information Retrieval?	2 Marks	L1	CO2
7.	Define inverted index in information retrieval?	2 Marks	L1	CO3
8.	Explain the purpose of link-based ranking in web search engines.	2 Marks	L2	CO3
9.	Define Content-Based Recommender Systems.	2 marks	L1	CO4
10.	Explain the feature extraction important in content-based systems?	2 marks	L2	CO4

Part - B

Answer the Questions. **Total Marks: 80M**

11.	**a.**	Explain the key milestones in the early development of Information Retrieval (IR) systems. How did these developments shape modern IR systems?	10 Marks	L2	CO 1
	b.	Summarize the typical tasks a user performs when interacting with an IR system. How do these tasks influence the design of IR systems?	10 Marks	L2	CO 1
OR					
12.	**a.**	Classify between Information Retrieval and Data Retrieval. Provide examples to illustrate the differences.	10 Marks	L2	CO 1
	b.	Explain the basic architecture of an Information Retrieval system. What are the key components, and how do they interact?	10 Marks	L2	CO 1

13.	**a.**	Problem: Solve TF-IDF for the term "computer" in a given document with the following details: • The corpus contains 5000 documents, and "computer" appears in 250 documents. In one document, "computer" appears 8 times out of 200 words.	10 Marks	L3	CO 2
	b.	Describe the different retrieval evaluation metrics such as Precision, Recall, and F-measure. How are they used to assess the performance of an IR system?	10 Marks	L2	CO 2
OR					
14.	**a.**	Problem: Solve *TF-IDF* for the word "car" given the following data: • The corpus has 1000 documents, and "car" appears in 50 documents. In a specific document, "car" appears 5 times out of 100 words.	10 Marks	L3	CO 2
	b.	Explain the concept of cosine similarity in the vector space model. Why is it used for document retrieval?	10 Marks	L2	CO 2

15.	**a.**	Explain the structure and working of an inverted index. How is it used in document retrieval systems?	10 Marks	L2	CO 3
	b.	Describe the major components of search engine architecture. How does each component contribute to the overall functioning?	10 Marks	L2	CO 3
OR					

16.	**a.**	Define sequential searching? Explain its advantages and limitations in the context of document retrieval.	10 Marks	L2	CO 3
	b.	Explain how it is useful in managing complex data types such as spatial or multimedia data.	10 Marks	L2	CO 3

17.	**a.**	Explain the functions of Recommender Systems.	10 Marks	L2	CO 4
	b.	Demonstrate a high-level architecture for a content-based news recommendation system, detailing each component.	10 Marks	L3	CO 4
OR					
18.	**a.**	Explain the Content-based Recommender Systems in detail.	10 Marks	L2	CO 4
	b.	Demonstrate and compare various recommendation techniques in detail.	10 Marks	L3	CO 4