Nirma University

Institute of Technology

Sessional Examination, April 2023

*B. Tech. in Computer Science and Engineering, Semester-VI

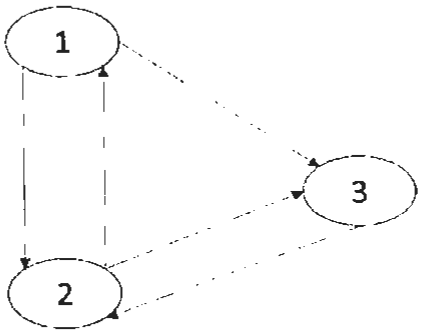
2CSDE53 INFORMATION RETRIEVAL SYSTEMS

Roll / Exam No.		Supervisor's initial with date	6/4/23

Time: 1 Hour 15 Minutes | Max. Marks: 35

Instructions:
1. Attempt all questions.
2. Figures to right indicate full marks.
3. Assume suitable data wherever necessary and specify them.

Q-1 **CLO2** Discuss the importance of page rank in information retrieval system and calculate the page rank of the web pages for the following web graph using power iteration method. Perform calculations up to five iterations. **[7]**



Q-2 **CLO1** Discuss in detail how web crawler deal with two parameters politeness and freshness. Explain the role of data structures in achieving above-mentioned parameters. **[7]**

Q-3 **CLO3** Initial Query =" costly gold costly diamond very costly gold". **[7]**

D1=" gold costly showroom costly gold"

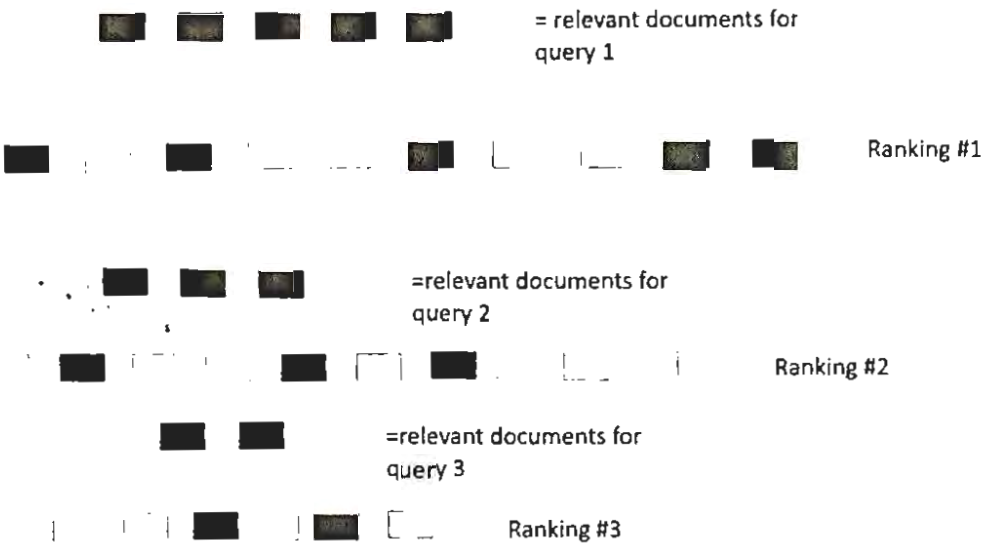
D2=" costly silver diamond "

What would the revised query vector after applying Rocchio relevance feedback mechanism if document D1 is judged as relevant and D2 is judged as not relevant?

Assume $\alpha=1$, $\beta=0.75$, and $\gamma = 0.25$.

Also Discuss the problem occur with pseudo relevance feedback approach in brief.

Q-4 **[7]**
CLO2



What is the role of recall and precision in information retrieval discuss with confusion matrix? Calculate the mean average precision for all relevance level mentioned in above figure.

Q-5 **CLO3** Consider technique collaborative filtering to implement recommender system. Utility matrix given below represents the rating for certain movies given by users. Predict the rating for Movie **M3** by User **U3** by user-user and item-item collaborative filtering using centered cosine similarity measure (Pearson correlation). Consider $|N| = 3$. Which technique is better user-user or item-item collaborative filtering? Justify your answer. **[7]**

		Users						
		U1	**U2**	**U3**	**U4**	**U5**	**U6**	**U7**
Movies	**M1**	3		2	1		4	
	M2			4	5			4
	M3	4	2		2	1		3
	M4		2	4		5		
	M5			4	3	4	2	
	M6	1		3		3		