K. J. Somaiya Institute of Engineering and Information Technology, Sion, Mumbai-22

(Autonomous College Affiliated to University of Mumbai)

End Semester Exam

Nov – Dec 2021

(B.Tech.) Program: **Information Technology**

Examination: **TY** Semester: **V**

Course Code: **1UITDLC5051** and Course Name: **Advanced Database and Information Technology**

Duration: 03 Hours   Max. Marks: 60

Instructions:

(1) All questions are compulsory.

(2) Draw neat diagrams wherever applicable.

(3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	12		
i)	List and explain in brief the steps followed to process a high level query.	2M	CO1	Understand
ii)	Explain what is meant by a distributed database and discuss the reasons behind providing such a system.	2M	CO2	Understand
iii)	Explain what is the multidimensional data model? How it is used in data warehouse?	2M	CO5	Understand

iv)	List the names of any five types of activities that are part of the ETL process. Which of these are time-consuming?	2M	CO4	Remember
v)	Explain in brief the main components of IR system	2M	CO3	Understand
vi)	List and explain in brief the indexing techniques.	2M	CO6	Understand
vii)	What are Mobile Databases? Explain the characteristics of mobile databases.	2M	CO2	Understand
viii)	What is the STAR schema? What are the component tables?	2M	CO4	Remember
Q.2	**Solve any four questions out of six.**	16		
i)	What do you understand by query optimization? What are query trees? Explain with an example.	4M	CO1	Understand
ii)	What is an Object identifier? Explain with an example. What are its advantages and disadvantages?	4M	CO2	Understand
iii)	Differentiate between star and snowflake schema.	4M	CO4	Analyze
iv)	Explain in detail data extraction techniques .	4M	CO4	Understand
v)	Explain classic information retrieval models in detail.	4M	CO3	Understand
vi)	Explain in detail the searching algorithm for inverted files.	4M	CO6	Understand
Q.3	**Solve any two questions out of three.**	16		

i)	Consider the following relations
	Customer (<u>cid</u>, cust_name, cust_phone)
	Purchase (<u>cid, item-code</u>, quantity)
	Consider the query "List the cid, cust_name, cust_phone, item-code and quantity of all items purchased by the customer whose cid ="C001".
	Perform the following task for the above
	    i. Write the above query using relational algebra and draw the query tree for the same.
	    ii. Transform the query tree into equivalent query tree such that the evaluation cost may be reduced.
		8M	CO1	Apply

ii)	List and explain any four operations in OLAP and apply it taking an example .	8M	CO4	Apply
iii)	List various fragmentation strategies in distributed database and explain any one in detail and apply it in an example.	8M	CO2	Apply
Q.4	**Solve any two questions out of three.**	16		
i)	Illustrate with the help of diagram the major steps in ETL process.	8M	CO4	Understand
ii)	Illustrate with the help of diagram explain taxonomy of Information Retrieval Models.	8M	CO3	Understand
iii)	Explain in detail the approach used in Multimedia Indexing.	8M	CO6	Understand.