3rd Semester Regular examination 2023-24
DATABASE ENGINEERING
BRANCH: IT
Time: 3 Hours
Max Marks: 100
Q Code: P154

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.

The figures in the right hand margin indicate marks.

Part-I

Q No.		CO	Level		
Q1				**Short Answer Type Questions (Answer All-10)**	**(02x10)**
	a)	1	2	Define logical data Independence.	2
	b)	1	1	Explain schema with example.	2
	c)	2	2	Explain any three SQL queries with examples.	2
	d)	2	1	Explain two types of participation constraints.	2
	e)	3	3	Justify why normalization is required?	2
	f)	2	2	Differentiate between unique key and primary key.	2
	g)	4	2	Explain two phase locking.	2
	h)	2	2	What are stored and derived attributes.	2
	i)	2	1	What is meant by the degree of relationship set?	2
	j)	2	1	What does cardinality ratio specify?	2

Part-II

Q No.		CO	Level		
Q2				**Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)**	**(06x08)**
	a)	3	2	Explain any three functional dependency with examples.	6
	b)	3	2	Explain lossless join decomposition with suitable example.	6
	c)	4	2	What is transaction? Explain its properties.	6
	d)	4	3	Give a detailed description about Query processing and Optimization. Explain the cost estimation of Query Optimization.	6
	e)	1	1	Explain the architecture of DBMS.	6
	f)	4	2	Explain concurrent execution of transaction. Differentiate different types of scheduling methods.	6

g)	4	1	What is concurrency lock technique for controlling concurrency? Define Shared lock and Exclusive lock.	6
h)	3	3	What is join operation in SQL? Mention the different types of joins Explain selection and projection.	6
i)	3	2	Explain any four aggregate functions with example.	6
j)	1	3	Construct ER-diagram for a hospital with a set of patients and a set of medical doctors. Associated with each patient a log of the various tests and examinations conducted.	6
k)	4	2	Explain state of transaction with the help of diagram.	6
l)	4	2	Give detail Explanation about Hashing & Types of Hashing.	6

Part-III

Q No.		CO	Level		
				Long Answer Type Questions (Answer Any Two out of Four)	**(02x16)**
Q3	a)	2	3	Consider the following database Employee(emp_id, emp_name, emp_city, emp_addr, emp_dept, join_date) and write sql query to: i) Display the emp_id, of employee who live in city 'Pune' or 'Nagpur'. ii) Change employee name, 'Aayush' to 'Aayan'. iii) Display the total number of employee whose dept is 50.	8
	b)	1	3	Draw an E-R diagram of library management system considering issue and return, fine calculation facility, also show primary key, weak entity and strong entity.	8
Q4	a)	2	3	Consider the following schema: supplier(sid, s_name, s_addr) parts(pid, p_name, color) catalog (sid, pid, cost) Answer the following queries in relational algebra or SQL queries. a) Find the name of all the suppliers who supply yellow parts. b) Find the name of the suppliers who supply both blue and black parts. c) Find the name of suppliers who supply all parts.	8
	b)	3	3	Given: $\{A \rightarrow BC, E \rightarrow CF, B \rightarrow E, C \rightarrow EF\}$. Compute the closure X^+ of the set of attributes $\{A,B\}$ under the given set of FDs.	8
Q5	a)	3	3	Define Normalization with its type. Also differentiate between 3NF and BCNF with suitable example.	8
	b)	3	4	Write a command to create table student (RNo., name, marks, dept.) with proper datatype and RNo as primary key.Also differentiate between primary and foreign key constraints with suitable example.	8
Q6	a)	2	3	List the SQL operations and explain range searching operation 'between' and pattern matching operator 'like' with example.	8
	b)	2	3	i. State the use of database trigger and also list types of trigger. ii. Consider the schema Depositor (ACC_no, Name, PAN, Balance) and Create a view on Depositor having attributes (ACC_no, PAN) where balance is greater than 100000.	8