Extra

S. E. Sem IV / R-19 / FH23 / 15/05/2023
(COMP)

Duration: 3hrs **[Max Marks:80]**

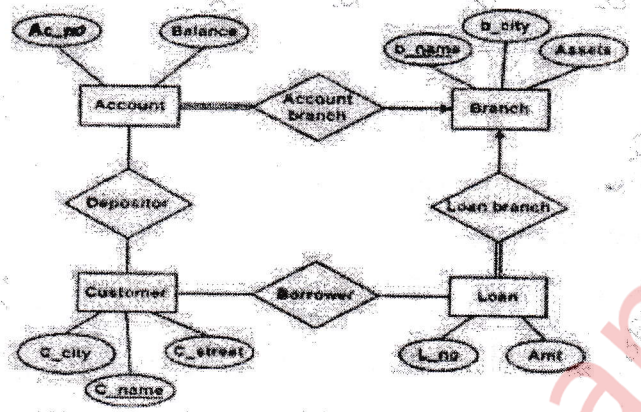
QP : 29883

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1 Attempt **any FOUR** **[20]**

a Identify different users of database management system

b Convert following E-R diagram to relational schema



c Explain all types of integrity constraints with an examples?

d List all functional dependencies satisfied by the relation.

X	Y	Z
X1	Y1	Z1
X1	Y2	Z1
X2	Y2	Z1
X2	Y2	Z1

e Discuss Log based recovery with an example

2 a Discuss three layer schema architecture with suitable diagram. What is Data Independence? Explain types of data independence. **[10]**

b What is deadlock? Give deadlock prevention methods with suitable example **[10]**

3 a Construct an ER diagram and convert it into a relational model for a company which has several employees working on different types of Projects. Several employees are working for one department, every department has a manager. Several employees are supervised by one employee. Employees have zero or more dependents **[10]**

b Explain the following Relational Algebra operations with suitable example. [10]

1) Generalized Project 2) Select

3) Union 4) Rename

5) Natural Join

4 a Write SQL queries for the given database [10]

Book(book_id, title,author, cost)
Store(store_no, city, state, inventory_val)
Stock(store_no, book_id,quantity)

(i)Modify the cost of DBMS books by 10%

(ii)Find the total number of books in Mumbai stores

(iii)Find title of all books whose title contains the word 'System'

(iv)Find title of the most expensive book

(v)Add a new record in Book(Assume values as per requirement)

b Why there is need of normalization? Explain 1NF, 2NF, 3NF and BCNF with example. [10]

5 a Describe ACID properties with examples [10]

b Give example of serial schedule and equivalent to serial schedule with respect to conflict serailizability. Discuss conflict serializability with example [10]

6 Write short note on the following **(Any four)** [20]

a Conversion of Specialization to relational schema with suitable example [05]

b Types of attributes [05]

c 2PL concurrency control protocol [05]

d Triggers [05]

e Lossless decomposition [05]

Q4. Drawback of traditional file processing system. Or explain disadvantages of conventional file-based system compared to database management system.

Q5. Explain advantages and disadvantages of DBMS.

Q6. List out the difference between file processing and DBMS.

Q7. Write in detail about applications of DBMS.

Q10. Explain data independence.

Q11. Write about DBMS system architecture and components of DBMS.

Q12. Write about Database Administrator and functions of database administrations.

Q2. Explain E-R model and its components. Explain weak and strong entity set.

Q3. Explain relationships and its degree.

Q4. List symbols used in ER diagram and its representations.

Q5. Explain mapping cardinality in ER diagram and participation constraints & its types.

Q7. Define attributes and its types. Explain relationship attributes.

Q9. Explain all keys used in DBMS.

Q11. Explain generalization, specialization, aggregation and constraints on generalization.

Q4. Explain tuple, table, attribute, domain, and properties of relational database.

Q5. Explain CODD's rule (All 12 rules) in detail.

Q6. Explain relational schema.

Q7. Explain types of keys in DBMS with suitable example.

Q9. Explain selection and projection operators in relational algebra with suitable example.

Q10. Explain all types of join operator with suitable example in relational algebra.