

Roll No. : .....

Total No. of Questions : 11 ]

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# **BPMS-524**

**M.Sc. (Previous) Examination, 2023**

**COMPUTER SCIENCE**

Paper - MCS-103

**(Database Management)**

*Time : 3 Hours ]*

*[ Maximum Marks : 50*

**Section-A**

**(Marks : 2 × 10 = 20)**

*Note :-* Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

**Section-B**

**(Marks : 3 × 5 = 15)**

*Note :-* Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **3** marks.

**Section-C**

**(Marks : 5 × 3 = 15)**

*Note :-* Answer any *three* questions out of five (Answer limit **500** words). Each question carries **5** marks.

**Section-A**

1. (i) What does a single ellipse represent in ER diagram ?
- (ii) Which symbol denote derived attributes in ER Model ?
- (iii) What do you mean by Entity Integrity ?

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- (iv) Explain candidate key with examples.
- (v) Explain the ordinal data in database.
- (vi) DELETE is a DDL command or DML command. Justify your answer.
- (vii) In which year 3NF was developed and who invented it ?
- (viii) What is super key in BCNF ?
- (ix) What is the need of concurrency control ?
- (x) How Aging is related to Starvation ?

**Section-B**

2. Define Database Management System (DBMS). What are the major components of this system ?

*Or*

Explain data dictionary. What are the functions of DBA ?

3. State about SELECT operation in relational algebra with the help of examples.

*Or*

State about UNION operation in relational algebra with the help of examples.

4. List the aggregate functions supported by SQL.

*Or*

List the table modification commands in SQL.

5. Define second normal form with examples.

*Or*

Define Third Normal form with examples.

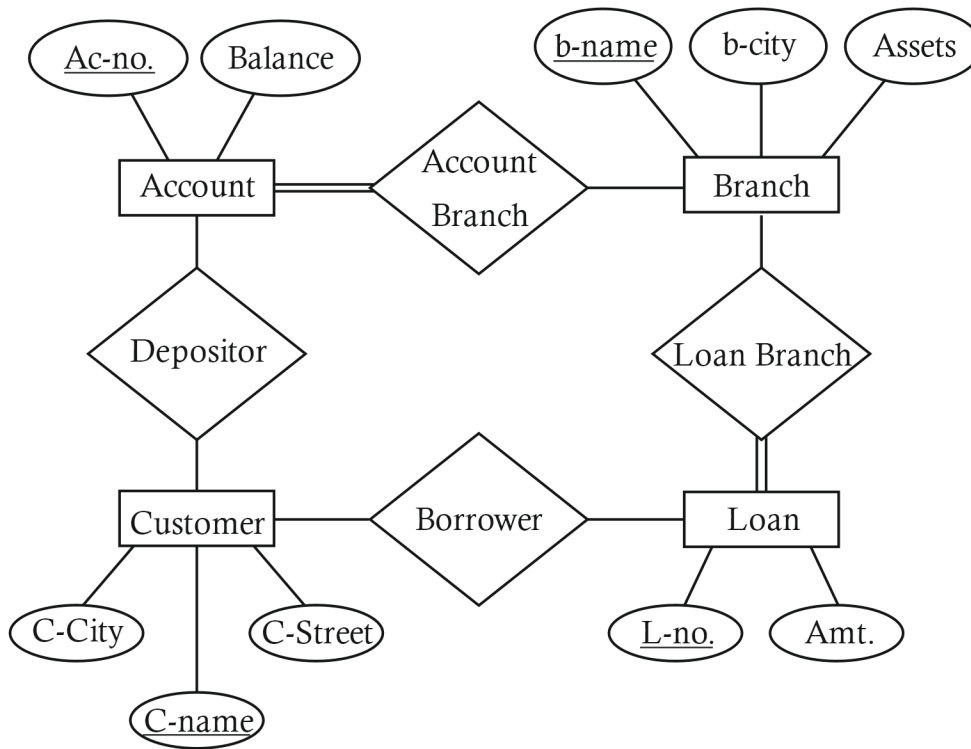
6. What are the different methods of loading dimension tables ?

*Or*

What is real-time data warehousing ?

**Section-C**

7. Find the minimum number of tables required to represent the given ER diagram in relational model :



Also tell the name of the tables.

8. Explain the different types of join with example.  
 9. Write SQL statements for relational expressions given below :

**User**

<b>Id</b>	<b>Name</b>	<b>Age</b>	<b>Gender</b>	<b>Occupation Id</b>	<b>City Id</b>
1	Amit	25	Male	1	3
2	Sita	20	Female	3	4
3	Rahul	31	Male	2	5
4	Manisha	27	Female	1	3

**Occupation**

Occupation Id	Occupation Name
1	Software Engineer
2	Teacher
3	Electrician
4	Plumber

**City**

City Id	City Name
1	Bikaner
2	Delhi
3	Mumbai
4	Chennai
5	Punjab

- (a)  $P_{name} [R_{Age>25} (user)]$
- (b)  $R_{Id>2 \vee Age \neq 31} (User)$
- (c)  $User_{\bowtie} Occupation_{\bowtie} city$
- (d)  $P_{name,gender} [R_{city\ name = "Mumbai"} (User_{\bowtie} city)]$
- (e)  $R_{user.occupation\ Id = Occupation.occupation\ Id} (User \times occupation)$

10. Explain Boyce-Codd normal form with example. How does it differ from 3NF ?

11. What is two-phase locking ? How does it guarantee serializability ?