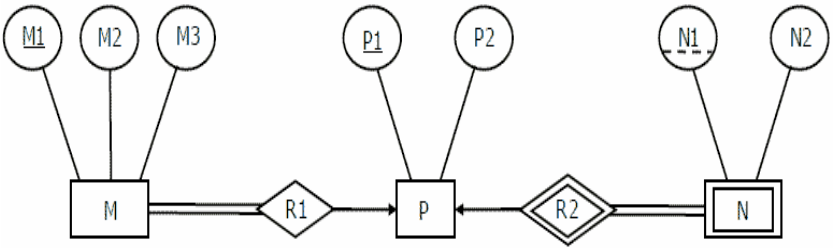
Name: Enrolment No:	

UPES

End Semester Examination, May 2024

Programme Name: MCA (All Spl.) **Semester : II**
Course Name : Database Management System **Time : 03 hrs.**
Course Code : CSEG7011 **Max. Marks: 100**
Nos. of page(s) : 2

[SECTION- A]

S. No.		Marks	CO
Q. 1	Describe, why you would choose a database system instead of simply storing data in operating system files.	**4 M**	**CO1**
Q. 2	Explain, Client-Server Architectures for DBMSs with diagram.	**4 M**	**CO1**
Q. 3	Consider the following ER diagram:  Map the above ER diagram to appropriate Relational Schema	**4 M**	**CO2**
Q. 4	Differentiate between super key and candidate key with example.	**4 M**	**CO2**
Q. 5	Illustrate the use of project and select in relational algebra.	**4 M**	**CO3**

[SECTION- B]

Q. 6	i. Compare dense and sparse index with suitable example. ii. Differentiate spanned and unspanned records.	**5 M** **5 M**	**CO2**
Q. 7	Consider the following Scheme: SUPPLIER (SUPPLIER ID, SUPPLIER_NAME, SUPPLIER_ADDRESS) PARTS (PART ID, PART_NAME, COLOR) CATALOG (SUPPLIER ID, PART ID, COST) Write the following queries in **Relational Algebra** and in **SQL**: (i) Find the name of the suppliers who supply Black Parts. (ii) Find the name of suppliers who supply both Blue and Black Parts.	**10 M**	**CO3**
Q. 8	Illustrate the role of DBA in any software industry.	**10 M**	**CO1**
Q. 9	Explain the method of testing the serializability. Consider the schedule S1 and S2 given below S1: R1(A),R2(B),W1(A),W2(B) S2: R2(B),R1(A),W2(B), W1(A) Check whether the given schedules are conflict equivalent or not? If, yes write safe sequence/s also.	**10 M**	**CO5**

[SECTION- C]			
Q.10	i. Explain the use of Normalization with suitable example. Consider the relation R (a, b, c, d) with Set F = {a→c, b→d}. Decompose this relation in 2 NF. ii. Explain the Loss Less Decomposition with example. iii. Explain multi value dependency with suitable example.	**10 M** **5 M** **5 M**	**CO4**
	(OR)		
	i. Consider the following relational schemes for a library database : **Book (Title, Author, Catalog_no, Publisher, Year, Price)** **Collection (Title, Author, Catalog_no)** with the given functional dependencies: i. Title Author → Catalog_no ii. Catalog_no → Title, Author, Publisher, Year iii. Publisher Title Year → Price Assume {Author, Title} is the key for both schemes. Compute the normal form of the above relations. ii. Explain different kind of anomalies with suitable examples.	**10 M** **10 M**	
Q.11	i. Prove that the basic two-phase locking protocol guarantees conflict serializability of schedules. ii. Discuss the timestamp ordering protocol for concurrency control. How does strict timestamp ordering differ from basic timestamp ordering?	**10 M** **10 M**	**CO5**