Register Number															

SRM Institute of Science and Technology
College of Engineering and Technology
School of Computing
SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

BATCH 1 SET B

Academic Year: 2022-2023 **(EVEN SEM)**

Test: CLAT-2 **Date: 12/04/2023**
Course Code & Title: 18CSC303J & DATABASE MANAGEMENT SYSTEMS **Duration:** 8 am to 9.40 am
Year & Sem: III & VI **Max. Marks:** 50
Instruction: MCQs to be collected within first 15 minutes

Course Articulation Matrix:

S.No.	Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	CO2	H	M	L									
2	CO3	H	M	L									
3	CO4	H	M	L									

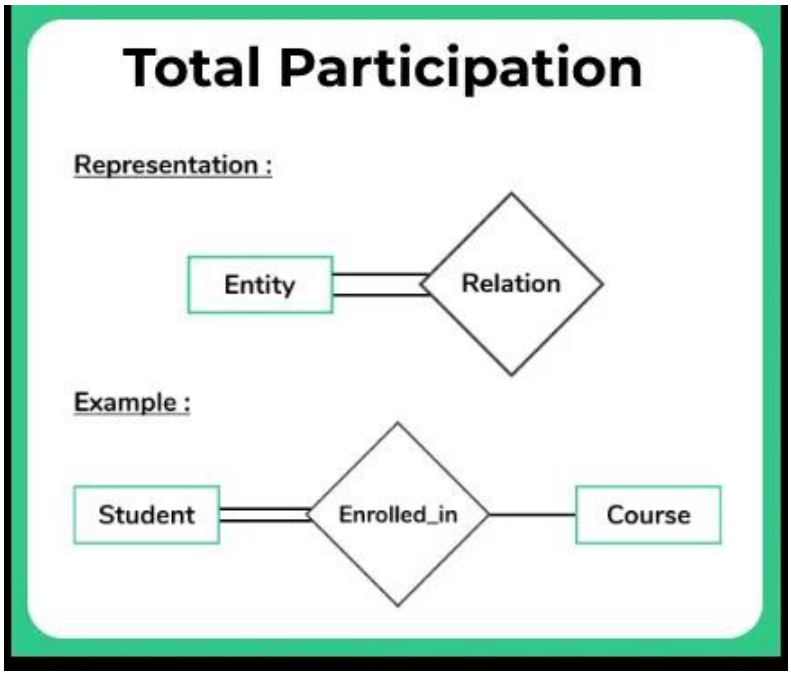
Part – A (10 x 1 = 10 Marks) Instructions: Answer all

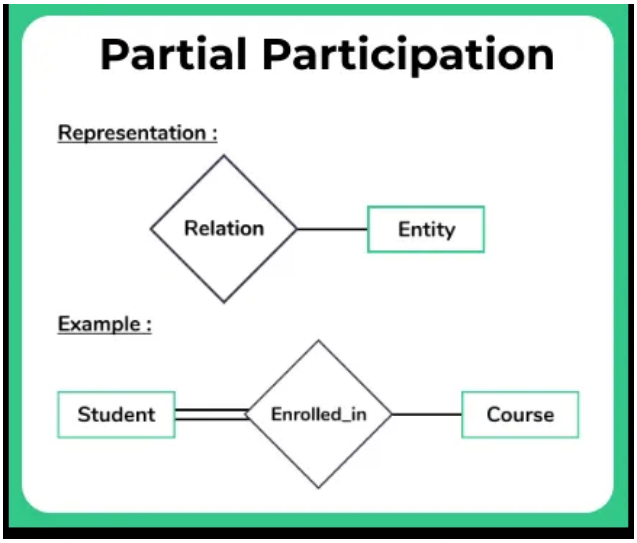
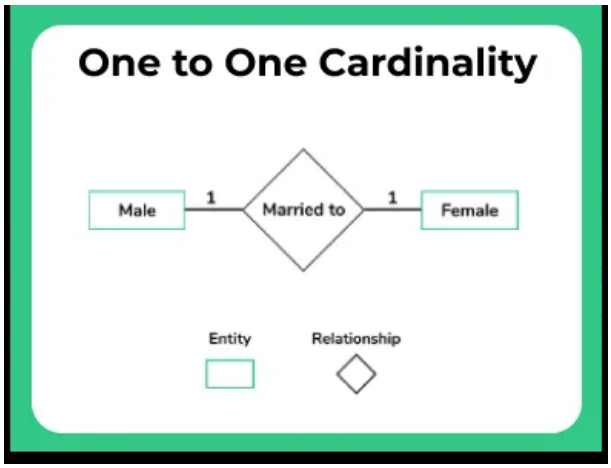
Q. No	Question	Marks	BL	CO	PO	PI Code
1	The _____data model was developed to facilitate database design by allowing specification of an *enterprise schema* that represents the overall logical structure of a database. (A) entity-relationship (B) relational (C) object oriented (D) logical	1	1	2	1	1.6.1
2	Ensuring isolation property is the responsibility of the a) Recovery-management component of the DBMS b) Concurrency-control component of the DBMS c) Transaction-management component of the DBMS d) Buffer management component in DBMS	1	2	2	1	1.6.1
3	A relation, say *r*1, may include among its attributes the primary key of another relation, say *r*2. This attribute is called a ____ key from *r*1, referencing *r*2. (A) super (B) foreign (C) primary (D) candidate	1	1	2	1	1.6.1
4	If only some entities in *E* participate in relationships in *R*, the participation of entity set *E* in relationship *R* is said to be _____. (A) partial (B) total (C) collective (D) complete	1	2	2	1	1.6.1
5	_____ operation is used to Output all pairs of rows from the two input relations (regardless of whether or not they have the same values on common attributes) in relational algebra operations. (A) Selection (B) projection (C) Natural join (D) cartesian product	1	1	2	1	1.6.1
6	Tuples variables are defined in the from clause using a. AS CLAUSE b. SELECT CLAUSE c. WHERE CLAUSE d. ALL CLAUSE	1	2	4	2	2.7.2
7	Which is the operator used to find out the matching between the string a. * b. / c. % d. +	1	1	4	1	1.6.1
8	The clause used to set condition in group by is a. WHERE b. HAVING c. FROM d. SELECT	1	1	4	2	2.6.1
9	_____ is preferred method for enforcing data integrity a. Constraints b. Stored Procedure c. Triggers d. Cursors	1	2	4	2	2.6.1
10	To display the salary from greater to smaller and name in ascending order which of the following options should be used? a) Ascending, Descending b) Asc, Desc c) Desc, Asc d) Descending, Ascending	1	1	4	2	2.6.1

Register Number															

BATCH 1 SET B

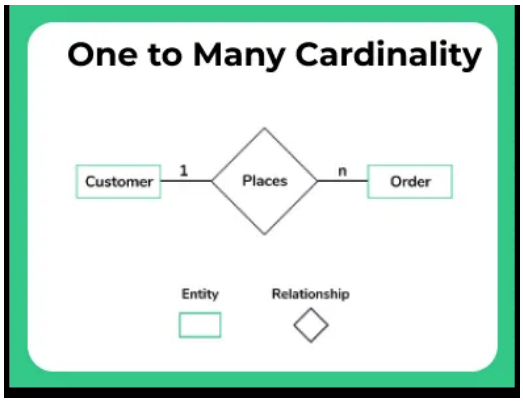
Part – B (4 x 4 = 16 Marks) Instructions: Answer any 4						
11	Explain about complex integrity constraints in SQL Constraints over a Single Table • Table Constraint • Create TABLE Sailors (sid INTEGER, • sname CHAR(10), • rating INTEGER, • age INTEGER, • PRIMARY KEY (sid), • CHECK (rating gt 1 AND rating lt10)) Example of Table Constraints • Create TABLE Reserves (sid INTEGER, • bid INTEGER, • day DATE, FOREIGN KEY (sid) REFERENCES Sailors • FOREIGN KEY (bid) REFERENCES Boats, • CONSTRAINT noInterLakeRes • CHECK (Interlake ltgt • (SELECT B.bname • FROM Boats B • WHERE B.bid Reserves.bid))) Domain Constraints • CREATE DOMAIN ratingval INTEGER DEFAULT 1 • CHECK (VALUE gt 1 AND VALUE lt10) • Source type integer • When creating table Sailors • rating ratingval • Problem • CREATE DOMAIN SailorID INTEGER • CREATE DOMAIN BoatID INTEGER • Same source type integer • Fail to disallow the comparison between SailorID and BoatID Distinct Types • CREATE TYPE sidType AS INTEGER • CREATE TYPE bidType AS INTEGER • They are distinct from each other and from the source type. ICs over Several Tables • Create TABLE Sailors (sid INTEGER, • sname CHAR(10), • rating INTEGER, • age INTEGER, • PRIMARY KEY (sid), • CHECK (rating gt 1 AND rating lt10) • CHECK ((SELECT COUNT (S.sid) FROM Sailors S) • SELECT COUNT (B.bid) FROM Boats B) lt100)) • Problem If the Sailors table is empty, this constraint is defined to always hold, which means	4	3	2	2	2.7.2

	the numbers of tuples in Boats can be anything. Assertions • CREATE ASSERTION smallClub • CHECK ((SELECT COUNT (S.sid) FROM Sailors S) • SELECT COUNT (B.bid) FROM Boats B) lt100) • Advantage not associated with either table. • Another example • CREATE ASSERTION TotalPaticipate • CHECK ((SELECT COUNT (S.sid) FROM Sailors S) • (SELECT COUNT (DISTINCT R.sid) FROM Reserves R))					
12	Write about the two types of participation constraint? ***1. Total Participation-*** • It specifies that each entity in the entity set must compulsorily participate in at least one relationship instance in that relationship set. • That is why, it is also called as **mandatory participation.** • Total participation is represented using a double line between the entity set and relationship set.  ***2. Partial Participation-*** • It specifies that each entity in the entity set may or may not participate in the relationship instance in that relationship set. • That is why, it is also called as **optional participation.** • Partial participation is represented using a single	4	3	2	1	1.6.1

	line between the entity set and relationship set.  					
13	What does the cardinality ratio specify? The cardinality ratios for relationship kinds specifies the maximum number of relationship instances in which an entity can participate in. The possible cardinality ratios for relationship categories are one-to-one (1:1), one-to-many or many-to-one (1:M or M:1), and many-to-many (M:N). 1. One to one cardinality • When a single instance of an entity is associated with a single instance of another entity, then it is called a one to one cardinality • Here each entity of the entity set participates only once in the relationship.  2. One-to-Many cardinality • When is a single instance of an entity is associated with more than one instance of another entity then	4	3	2	2	2.6.1

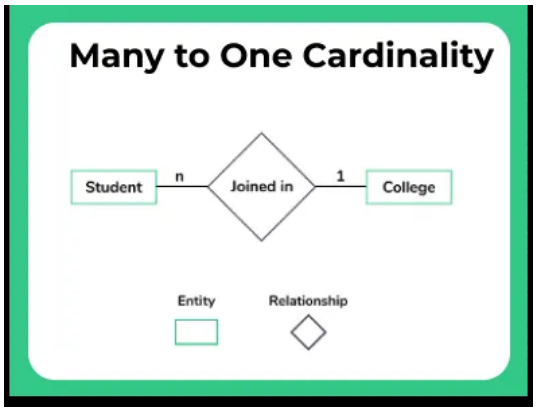
this type of relationship is called one to many relationships

- Here entities in one entity set can take participation in any number of times in relationships set and entities in another entity set can take participation only once in a relationship set.



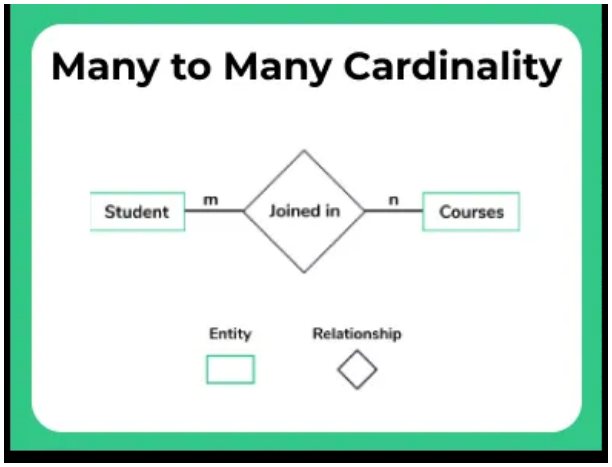
3. Many-to-one cardinality

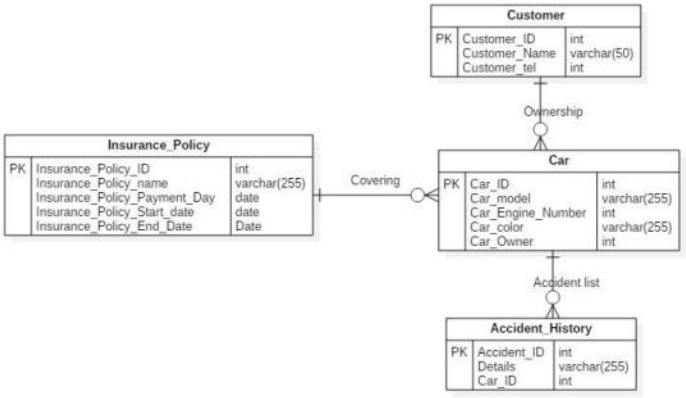
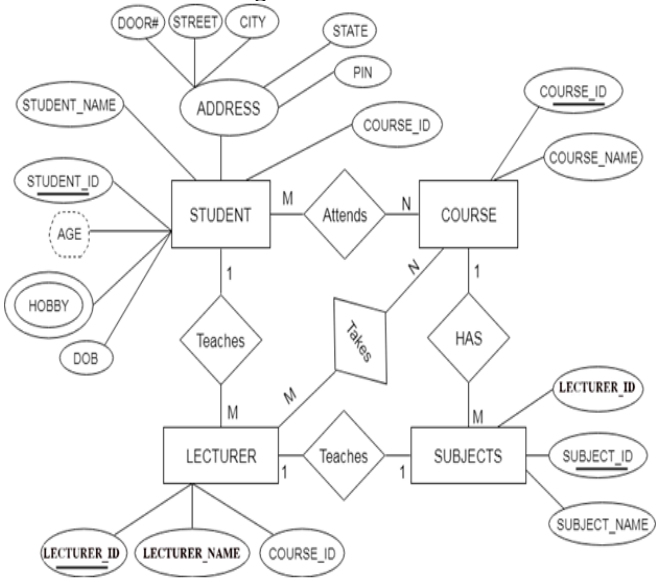
When entities in one entity set can participate only once in a relationship set and entities in another entity can participate more than once in the relationship set, then such type of cardinality is called many-to-one



4. Many-to-many cardinality

- Here more than one instance of an entity is associated with more than one instance of another entity then it is called many to many relationships
- In this cardinality, entities in all entity sets can **take participate any number of times in the**

	relationship cardinality is many to many. 					
14	What are the privileges that can be granted on a table by a user to others? • ALTER • Change the table definition with the ALTER TABLE statement. • DELETE • Remove rows from the table with the DELETE statement. You must grant the SELECT privilege on the table along with the DELETE privilege. • INDEX • Create an index on the table with the CREATE INDEX statement. • INSERT • Add new rows to the table with the INSERT statement. • REFERENCES • Create a constraint that refers to the table. You cannot grant this privilege to a role. • SELECT • Query the table with the SELECT statement. • UPDATE • Change data in the table with the UPDATE statement. You must grant the SELECT privilege on the table along with the UPDATE privilege	4	3	4	2	2.6.1
15	What is a view? How can it be created? Explain with an example. ○ Views in SQL are considered as a virtual table. A view also contains rows and columns. ○ To create the view, we can select the fields from one or more tables present in the database. ○ A view can either have specific rows based on certain condition or all the rows of a table. *Creating view* A view can be created using the **CREATE VIEW** statement. We can create a view from a single table or multiple tables.	4	3	4	2	2.6.1

	Syntax: CREATE VIEW view_name AS SELECT column1, column2..... FROM table_name WHERE condition; Example: CREATE VIEW DetailsView AS SELECT NAME, ADDRESS FROM Student_Details WHERE STU_ID < 4;					
	Part – C Answer all (2 x 12 = 24 Marks)					
16 (a)	Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. State any assumptions you make for the ER representations. Mark all the necessary cardinalities (OR)  	12	4	3	3	3.6.2
16 (b)	Convert the ER to tabular form. Reduce the following ER diagram to Relational Schema using the standard rules and brief them.  	12	4	3	3	3.6.2

- **Entity type becomes a table.**

In the given ER diagram, LECTURE, STUDENT, SUBJECT and COURSE forms individual tables.

- **All single-valued attribute becomes a column for the table.**

In the STUDENT entity, STUDENT_NAME and STUDENT_ID form the column of STUDENT table. Similarly, COURSE_NAME and COURSE_ID form the column of COURSE table and so on.

- **A key attribute of the entity type represented by the primary key.**

In the given ER diagram, COURSE_ID, STUDENT_ID, SUBJECT_ID, and LECTURE_ID are the key attribute of the entity.

- **The multivalued attribute is represented by a separate table.**

In the student table, a hobby is a multivalued attribute. So it is not possible to represent multiple values in a single column of STUDENT table. Hence we create a table STUD_HOBBY with column name STUDENT_ID and HOBBY. Using both the column, we create a composite key.

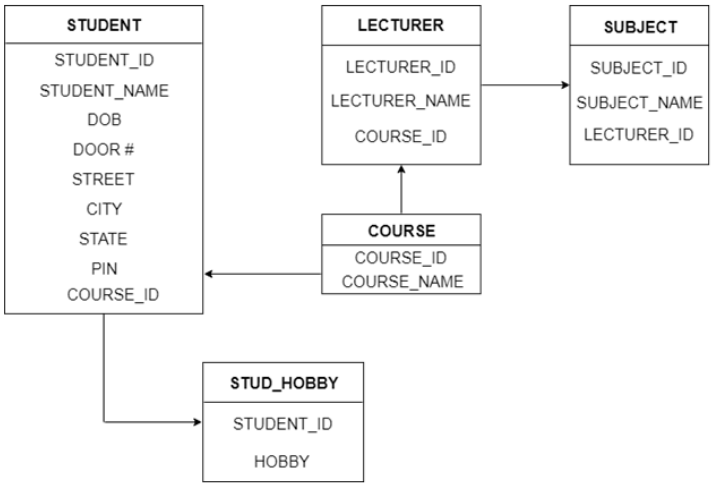
- **Composite attribute represented by components.**

In the given ER diagram, student address is a composite attribute. It contains CITY, PIN, DOOR#, STREET, and STATE. In the STUDENT table, these attributes can merge as an individual column.

- **Derived attributes are not considered in the table.**

In the STUDENT table, Age is the derived attribute. It can be calculated at any point of time by calculating the difference between current date and Date of Birth.

Using these rules, you can convert the ER diagram to tables and columns and assign the mapping between

	the tables. Table structure for the given ER diagram is as below:  					
17 (a)	Consider the following tables: Worker Table (Worker_ID, First_name,last_name,Salary, Joining_date) Bonus (Worker_Ref_ID,Bonus_Date,Bonus_Amount) Titletable(Worker_Ref_Id, Worker_Title, Affected_from) i. Update the table Bonus amount by 5% for the worker id = W101 ii. Write an SQL query to fetch worker names with salaries >= 50000 and <= 100000. iii. Write an SQL query to fetch intersecting records of two tables. iv. Write an SQL query to fetch the names of workers who earn the highest salary. **Answer:** 1. Select Worker Table.Worker_ID, worker table.First_name,worker table.salary,bonus.bonus_amount where bonus.bonus_amount = 1.05*bonus.bonus_amount and workertable.worker_id=”W101”. (If we are considering the worker id is asked from the worker table in the question); (or) UPDATE Bonus set bonus_amount = 1.05*bonus_amout where worker_ref_id=”W101”; (If we are considering the worker id is take from the bonus table in the question) 2. Select First_name,last_name,salary from Worker table where (salary>=50000 and salary<=100000); 3. Select * from Bonus INTERSECT Select * from TitleTable; 4. Select Worker_ID, First_name, last_name from Worker Table where salary = (select max(salary) from worker table); (OR)	12	4	4	3	3.6.2
17 (b)	(i) Create a PL/SQL procedure for identifying the input string as palindrome or not.	12	4	4	3	3.6.2

```
DECLARE

    s VARCHAR2(10) := 'abccba';
    l VARCHAR2(20);
    t VARCHAR2(10);
BEGIN
    FOR i IN REVERSE 1..Length(s) LOOP
        l := Substr(s, i, 1);

        t := t
             ||''
             ||l;
    END LOOP;

    IF t = s THEN
      dbms_output.Put_line(t
         ||''
         ||' is palindrome');
    ELSE
      dbms_output.Put_line(t
         ||''
         ||' is not palindrome');
    END IF;
END;
```

Output:

```
abccba is palindrome
```

(ii) Write SQL queries for following

Consider EMP with following attributes using suitable data types (Eno, Ename, Deptname, Salary, designation, Joining_Date)

i. Display names of employee whose name start with alphabet 'A'
ii. Display names of employee who joined before '1/1/2000'
iii. Increase the salary of employees by 20% who joined after '1/1/2005'

ANSWER

Select eno,ename,designation from emp where name like 'A%';

Select eno,ename,designation from emp where joining_date< '1/1/2000';

Update employees set salary = salary*1.2 where join_date>'1/1/2005';

Course Outcome (CO) and Bloom's level (BL) Coverage in Questions