



AUTUMN MID SEMESTER EXAMINATION-2023

School of Computer Engineering
Kalinga Institute of Industrial Technology, Deemed to be University
Database Management System
[CS-2004]

Time: 1 1/2 Hours

Full Mark: 40

Answer Any four Questions including Question No. 1 which is compulsory.

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.

1. Answer all the questions. [2 x 5]
- Why are entity integrity and referential integrity important in a database? Explain with suitable example.
 - Consider two entity sets named as **CUSTOMER** and **PRODUCT** and the relationship set **ORDER** having cardinality M:N. The customer attributes are (cus_id, cus_name, cust_contact number as multi-valued attribute) and Product (prod_id, prod_name). What is the minimum number of tables required represent this situation in the relation model? How multi valued attribute is different from composite attribute?
 - Consider the below two tables for the given question: Write a SQL query to fetch employee names having a salary greater than or equal to 5000 and less than or equal to 10000.

Table 1: Employee Details

Empld	FullName	ManagerId	DateOfJoining
121	John snow	321	31/01/2024
321	Walter	986	30/01/2015
421	Rajdeep	876	27/11/2016

Table 2: Employee salary

Empld	Project	Salary
121	P1	8000
321	P2	1000
421	P1	12000

- What is the SQL command to add Stud_id and Stud_name as composite key for student table using ALTER command.
- Distinguish between Disjoint and overlapping constraint with appropriate example.

2. Consider the information requirements of book clubs, located in a town, as follows: Each book club (identified by club-id with club-name and location as its attributes) has members (identified by member-id with member-name and address as its attributes). The book club sells books (identified by isbn-number with title as attributes) to its members. The members place orders (identified by order-id, with date as attributes) for books, which the book club fulfills. Each order contains one or more than one books. The books are written by author(s) (identified by author-id, with name as its attributes). A publisher (identified by publisher-name with address as attributes) can publish many books but a book cannot be published by more than one publisher. An authors can write more than one book and a book

can have more than one author. A member can place more than one order. He/she also can choose not to place an order. The book club sells many books.

Answer the following questions:

- a) Construct the ER diagram. [6 marks]
- b) Map the ER diagram to relations and identify the primary and foreign keys. [4 marks]

3. Employee (empno, ename, dept, doj, mob)

Customer (cno, cname, city, mobno, interest)

Deal (empno, cno, date, category)

Write SQL statements to create the given tables(Employee, Customer and Deal) along with necessary

key constraints (primary as well as foreign keys). Also ensure that name of the employee and customer name cannot be null. [2 marks]

Solve the following queries by using relational algebra and SQL. [2 marks each]

- a) Find the employees' names dealing in 'Fashion' category.
- b) Find the customers' names, who are dealing with all the customers.
- c) Find the customers, who are dealing the customers with 'Designer Handbags' interests.
- e) List the customers' names dealing to the 'BBSR' customers in the year 2023. [8marks]

4. Consider a university database that will store information about all their staff members, students, courses, subjects, department and other details. Staff members (having unique SSN, job_type, birth_date) can be classified either as faculty or administrative staff or worker through an attribute defined specialization on job_type. Faculty members (identified by faculty-id, with faculty-name, faculty_phone number (multivalued attribute), doj, and specialization as attributes) belong to several departments ((identified by dept-id, with dept-name as attributes). Each department is managed by one Director, who is also a faculty member. For students, the database stores the details like name, roll, dob, age, hobby, and address. The address consists of door_no, street_name, city, state, and pin. A student can register for many courses where each course has a unique course_id, and course_name. Similarly, a course can be taken by many students. A faculty can teach only one subject, where the subject has a unique subject_id, subject_name, and duration. However, a subject can be taught by many faculties. Each Course consists of many subjects; however one subject can belongs to multiple courses. All students are managed by the faculties.

- (a) Draw EER diagram for the above scenario. [6 marks]
- (b) Convert the ER diagram into relational schema. [4marks]

5. Write Short notes on any 2 of the followings. [Each 5 marks]

- (a) constraints on Generalization/Specialization
- (b) DBMS functional Components
- (c) Inner join vs Outer join