

**Mid Semester Examination – 2018**  
**School of Computer Engineering**  
**Kalinga Institute of Industrial Technology (KIIT) Deemed to be University**  
**Subject: Database Management System**

Time: 1.5 Hrs

Full Marks: 25

*(Answer any Five Questions including Question No. 1)*

1. Answer the following questions briefly. [1 X 5]
  - a. At the time of data manipulation, the database system first consults with the data dictionary – Justify.
  - b. Differentiate between composite key and composite attribute.
  - c. Discuss whether a character field that contains a NULL value and a character field that contains a single blank space are same or not.
  - d. Can a weak entity set exist without a strong entity set – Justify?
  - e. Differentiate between ALTER and UPDATE commands in SQL.

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2. Describe the three-schema architecture. Why do we need mappings between schema levels? Also, differentiate between logical data independence and physical data independence. [5]
  3. Discuss the different types of constraints applicable to Generalization/Specialization. Provide suitable examples to support your answer. [5]

4. Draw the entity-relationship diagram for the different industries as below:

There are many industries (identified by unique inid along with name, location and contact number(s)). Each industry has multiple departments. Each department has one unique did along with extension number. Each departments is producing multiple products. Each product has one unique prid along with product description, price and label. Many workers (identified by unique wid along with wname, salary, doj and address (can be decomposed to street, city and pin) as attributes) are working in the different departments; but, one worker can work in one department only. The workers are managing the different products.

Make necessary assumptions. Also convert the ER diagram into relational schemas.[5]

5. Draw the entity-relationship diagram for the Shopping Mall as follows:

There are many departments exist. Each department has one unique did, location and strength as attributes. Employees (identified by unique empid along with ename, doj, contactno) are working in different departments; one employee can work in maximum one department. Different customers are visiting different departments. Employees are managing the customers. Each customer has one unique cid along with cname and city. All customers are categorized as Preferred Customers (membership as extra attribute) or General Customers (shopping habits as extra attribute).

Make necessary assumptions. Also convert the ER diagram into relational schemas.[5]

[P.T.O.]

6. Consider the following relational schema

Student (roll, name, dob, mobno, city)

Books (isbn, title, authors, publisher)

Borrow (roll, isbn, issuedate)

- a. Primary keys are underlined. Identify the foreign keys and create tables of all the above schemas using SQL statement. [3]
- b. Solve the following queries using SQL or Relational Algebra: [1+1]
  - i. Find the book details published by the publisher containing 'M' as a character in it.
  - ii. Find the name of the students who are from Bhubaneswar city and took birth before 1<sup>st</sup> January 2000.

7. Write Short notes of any two of the following: [2.5 X 2]

- a. Advantages of Database System compared to traditional file processing system.
- b. Relational Database Constraints
- c. Components of Database Architecture

~~~~~ ALL THE BEST ~~~~~