



UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE : DCT2053
COURSE : DATABASE CONCEPT
SEMESTER/SESSION : 1 - 2021/2022
DURATION : 3 HOURS

Instructions:

1. This booklet contains **5** questions. Answer **ALL** the questions.
2. All answers should be written in answer booklet.
3. Write legibly and draw sketches wherever required.
4. This is an open book online exam.

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO

THIS BOOKLET CONTAINS 6 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

- a) Define the term database. (3 marks)
- b) List **FIVE (5)** limitations of file processing system. (5 marks)
- c) A database management system (DBMS) is essentially nothing more than a computerized data-keeping system. User of the system are given facilities to perform several kinds of operations that enables to manage a database easily.
- i. State **FOUR (4)** components of database system. (4 marks)
- ii. Describe at least **THREE (3)** functions of DBMS. (6 marks)
- iii. Give **TWO (2)** examples of DBMS product used in the market today. (2 marks)
- d) Explain **THREE (3)** phases of building a database system. (6 marks)
- e) Give an example of a large enterprise database application. (1 mark)

QUESTION 2

- a) Differentiate between logical and physical database design. (4 marks)
- b) Database developer normally uses several fact-finding techniques during a single database project. List **TWO (2)** techniques that commonly used. (2 marks)
- c) Define the terms below : (1 mark)
- i. Tuple

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- ii. Attributes (1 mark)
- ii. Table (1 mark)
- d) Give an example of the **THREE (3)** types of entity relationships. Draw an E-R diagram for each. (6 marks)
- e) Draw an **ER diagram** for a company purchases products and sells them to its customers. Each time a sale occurs, an invoice is created listing the customer's name, and a list of purchase product descriptions, the supplier name for the products, and the price of each product. The product number identifies each product and will appear again if another customer purchases the same product. Each supplier can supply many products which we can sell, but each product has only one supplier. (7 marks)

QUESTION 3

- a) Explain the following keys :
- i. Primary key (2 marks)
- ii. Candidate key (2 marks)
- iii. Foreign key (2 marks)
- iv. Composite key (2 marks)
- b) Normalization will eliminate the modification anomalies. Define third Normal Form (NF). (3 marks)

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- c) Given an example of a relation in 2NF, but not in 3NF. Transform the relation into relations in 3NF. (3 marks)

STUDENT (Matric_No, Student_Name, Adress, Course, Hour_Required)

QUESTIONS 4

As a Database Designer in one hotel company, you are assigned to design the tables and the relationship for the hotel booking system. You have to design the database using appropriate software and document the design.

The following tables form part of a database held in DBMS:

Hotel (hotelNo, hotelName, city)

Room (roomNo, hotelNo, type, price)

Booking (hotelNo, guestNo, dateFrom, dateTo, roomNo)

Guest (guestNo, guestName, guestAddress)

Where Hotel contains hotel details and hotelNo is the primary key;

Room contains room details for each hotel and (roomNo, hotelNo) forms the primary key.

Booking contains details of bookings and (hotelNo, guestNo, dateFrom) forms the primary key.

Guest contains guest details and guestNo is the primary key;

- a) Draw all the tables with suitable data types. (6 marks)
- b) Draw the correct entity relationship diagram. (4 marks)

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- c) Sketch **TWO (2)** samples report for the above database design. (6 marks)

QUESTIONS 5

- a) Write SQL command to create the EMPLOYEE table. Set EmployeeID as a primary key and cannot be null. Define data types and constraint. (3 marks)

Sample EMPLOYEE Data

EMPLOYEE

EmployeeID	Name	Phone	Email
0100	Ahmad	0109874356	ahmad@uctati.edu.my
0200	Muhammad	0198876543	rmuhd@adtec.edu.my
0300	Umar	0138748783	umar@yahoo.com.my
0400	Ibrahim	0167254634	ibrahim@gmail.com

- b) Assume FiredUp has created a database with the following tables:

CUSTOMER (CustomerSK, Name, Phone, EmailAddress)

STOVE (SerialNumber, Type, Version, DataOfManufacture)

REGISTRATION (CustomerSK, SerialNumber, Date)

STOVE_REPAIR (RepairInvoiceNumber, SerialNumber, Data,

Description, cost, CustomerSK)

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Write the SQL command for the following questions, assume all dates are in the format mmddyyyy.

- i. List the versions of all stoves of a type FiredNow. (2 marks)
- ii. List the SerialNumber and Date of all registrations in the year 2000. (2 marks)
- iii. List the SerialNumber and Date of all registrations in February. Use the underscore (_) wildcard. (2 marks)
- iv. List the SerialNumber and Date of all registrations in February. Use the percent (%) wildcard. (2 marks)
- v. List the names of all customers who do not have an EmailAddress; present the results in descending sorted order of Name. (2 marks)
- vi. Determine the maximum cost of a stove repair. (1 mark)
- vii. Determine the average cost of a stove repair. (1 mark)
- viii. Count all stoves of each type and display the Type and count. (2 marks)
- ix. List the names, e-mail addresses, and registration date of all customer registrations. (2 marks)

----- End of question -----