UNIVERSITY COLLEGE TATI

UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DCT2053
COURSE	: DATABASE CONCEPTS
SEMESTER/SESSION	: 1-2024/2025
DURATION	: 3 HOURS

Instructions:

1. This booklet contains **FIVE (5)** questions. Answer **ALL** questions.
2. All theory answers should be written in the answer booklet provided.
3. Write legibly and draw sketches wherever required.
4. If in doubt, raise your hands and ask the invigilator.

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

THIS BOOKLET CONTAINS 5 PRINTED PAGES INCLUDING COVER PAGE

QUESTION 1

a) Distinguish between Database and Database Management System (DBMS).

(3 marks)

b) Identify **FOUR (4)** of DBMS functions. (4 marks)

c) Give **FOUR (4)** examples of DBMS software used nowadays. (4 marks)

QUESTION 2

a) Explain **FOUR (4)** problems that usually been faced by using file system data processing.

(8 marks)

b) Describe **SIX (6)** evolution of data models from year beginning until now. (6 marks)

c) Distinguish the characteristic between 1NF, 2NF, 3NF and Boyce-Codd NF.

(4 marks)

QUESTION 3

a) Sepakat Bersama plans on having a Tracking Information System. Shipped items are the core of the Sepakat Bersama product tracking information system. Shipped items can be categorized by its unique of item number, weight, dimensions, insurance amount, destination, and final delivery date. Shipped items are received into the Sepakat Bersama system at an only retail center. Retail center is characterized by their type, unique ID, and address. Shipped items make their way to their destination thru one or more standard Sepakat Bersama transportation events (eg: flights, truck deliveries). These transportation events are considered by a schedule Number (unique), a type (eg: flight, truck), and a delivery route.

Construct an **Entity Relationship diagram (ERD)** for the above case study. To gain maximum marks, you must deliver at least **THREE (3)** entities, correct attributes for each entity, identify correct Primary and Foreign Key (if exist) and correct relationship between entities.

(14 marks)

b) Create an ERD diagram for each of the following description:

i. Each lecturer teaches five classes, and each class belongs to one lecturer.

ii. Each course generates one or more classes, and each class belongs to one course.

iii. Each of the lecturer may or may not have one or more students, and each student belongs to one lecturer.

(6 marks)

c) List **FIVE (5)** types of fact-finding techniques. (5 marks)

d) Convert the following dependency diagram in Figure 1 to the 2NF:

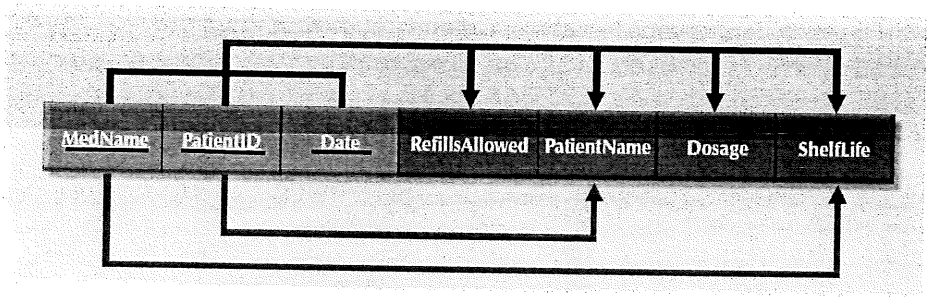

Figure 1: Unnormalized Relation

(MedName, PatientID, Date, RefillsAllowed, PatientsName, Dosage, ShelfLife)

(4 marks)

QUESTION 4

a) Write SQL command to create table **STUDENT** as per the following table schema. Set the StudentID as a Primary Key and cannot be NULL. Define proper data type and size for each attribute.

StudentID	StudentName	Address

(4 marks)

b) Write the SQL statements for the given questions (i-v) based on Figure 2:

Table: Staff

StaffID	StaffName	DOB	DeptCode	StateID
00101	Melati	22/06/1998	IT	03
00102	Naim	01/01/1994	ENG	02
00103	Safayraa	16/02/2000	ENG	03
00104	Zaheen	31/12/1990	FIN	04
00105	Muhaimin	19/03/1985	IT	01
00106	Daniel	02/04/2002	SLS	01

Table: Department

DeptCode	DeptName
ENG	Engineering
FIN	Finance
IT	Information Technology
SLS	Sales

Table: State

StateID	StateName
01	Melaka
02	Selangor
03	Pahang
04	Perak

Figure 2: Tables

i. List StaffID and StaffName. (1 mark)

ii. Using join, list StaffID, StaffName, DOB, DeptName and StateName. (4 marks)

iii. List all staff whose name start with 'M'. (3 marks)

iv. Update the DeptCode of StaffID belong to '00103' to 'FIN'. (3 marks)

v. Delete all staff from the Sales department. (2 marks)

c) Distinguish between database interface and database report. (2 marks)

d) List **SIX (6)** types of database interfaces. (6 marks)

QUESTION 5

a) The selection of DBMS software is critical to the information system's smooth operation. Explain **FOUR (4)** factors that affect the purchasing decision of DBMS software.

(8 marks)

b) Discuss **TWO (2)** approaches that have been used in database design strategies.

(4 marks)

c) Describe **Database Performance Tuning**. (2 marks)

d) Identify **THREE (3)** phases of DBMS processing query. (3 marks)

----------**End of Questions**----------