

**UNIVERSITY COLLEGE TATI (UC TATI)****FINAL EXAMINATION QUESTION BOOKLET**

COURSE CODE	: BCS1423
COURSE	: DATABASE SYSTEMS
SEMESTER/SESSION	: 1-2022/2023
DURATION	: 3 HOURS

Instructions:

1. This booklet contains 5 questions. Answer **ALL** questions.
2. All answers should be written in answer booklet.
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) Describe about database. (2 marks)
- b) Explain **THREE (3)** limitations of file system. (6 marks)
- c) List **FOUR (4)** advantages of Database Management System (DBMS). (4 marks)

QUESTION 2

- a) Explain about derived attribute. Give **ONE (1)** examples of derived attribute. (3 marks)
- b) Based on the following Table 1, perform the normalization process by drawing the dependency diagram. To gain maximum marks, you have to draw correct dependency diagram with correct label of partial and transitive dependency. (13 marks)

Table 1: Car Rental

PlateNo	Model	DayPrice	CusID	CusName	PhoneNo	RentDate	RetDate	TotalCost
TBX1011	Axia 1.0	60	A100	Umar	0199112676	20/2/2022	23/2/2022	180
TCD2022	Vios G	120	A103	Humaira	0127382920	25/2/2022	26/2/2022	120
TAA1967	City	120	A104	Ainul	0129099111	25/2/2022	28/2/2022	360
TDD3092	CRV	180	A100	Umar	0199112676	27/2/2022	28/2/2022	180
TBX1011	Axia 1.0	60	A101	Nuha	0185627381	1/3/2022	5/3/2022	240
TDD3092	CRV	180	A103	Humaira	0127382920	1/3/2022	5/3/2022	720
TBX1011	Axia 1.0	60	A105	Irfan	0111098567	3/3/2022	4/3/2022	60
TDX8880	CRV	180	A100	Umar	0199112676	3/3/2022	4/3/2022	180
TCC1023	Axia 1.0	60	A101	Nuha	0185627381	3/3/2022	5/3/2022	120
TBX1011	Axia 1.0	60	A105	Irfan	0111098567	5/3/2022	9/3/2022	240

- c) Draw the Entity Relationship Diagram (ERD) based on 3NF answer in Question 2 (b). (6 marks)

QUESTION 3

- a) Explain the function of the following SQL commands: (6 marks)
- i. CREATE
 - ii. DROP
 - iii. ALTER
 - iv. COMMIT
 - v. UPDATE
 - vi. INSERT
- b) Write the SQL statements for the given questions based on the following tables:

Table 1: Customers

CusID	Name	PhoneNo	Gender
00101	Uzair	019-8911010	Male
00102	Abu Bakar	013-5679023	Male
00103	Humaira	017-5679011	Female
00104	Umar	019-1109167	Male
00105	Muhammad	012-4567914	Male

Table 2: Invoices

InvID	InvDate	CusID	StaffID	Total
001	12/1/2022	00104	02	89.00
002	12/2/2022	00104	03	145.50
003	13/2/2022	00105	02	42.70
004	21/2/2022	00102	04	218.20
005	21/2/2022	00101	04	113.00
006	25/2/2022	00105	01	74.90

Table 3: Staff

StaffID	StaffName
01	Najib
02	Rosmah
03	Anwar
04	Sabri

- i. List all the female customers. (2 marks)
- ii. List customer's name and phone number order by customer name. (2 marks)
- iii. Display the list of invoice ID, invoice date, customer's names, staff name and total. (4 marks)

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- iv. Display and find the total of purchased by customer ID 00105. (3 marks)
- v. Update the phone number of customer ID belongs to '00103' to '019-9123890'. (3 marks)
- vi. Delete the invoice record of invoice date on 13/2/2022. (2 marks)

QUESTION 4

- a) Explain **SIX (6)** stages in database lifecycle. (12 marks)
- b) Describe **THREE (3)** types of database maintenance. (6 marks)
- c) Explain **TWO (2)** factors of DBMS software selection. (4 marks)

QUESTION 5

- a) Explain **FIVE (5)** transaction properties. (10 marks)
- b) Assume that to produce a fan, it composed of **THREE (3)** different parts; we called it as part X, part Y and part Z. Each time new fan is created, it must be added into the product inventory using the Quantity attributes in PRODUCTS table. In the same time the fan is created, the parts of inventory in the table PARTS also must be reduced by one for parts X and Y, and two for part Z using the attribute PartQTY. The sample of table structure is as in following Figure 1.

Table Name: PRODUCTS		Table Name: PARTS	
Product	Quantity	PartID	PartQTY
FAN	358	X	514
		Y	567
		Z	1024

Figure 1

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- i. Using SQL statement, write the update request for database when the fan was created. (8 marks)
- ii. Write the complete transaction(s) as per the following template. (4 marks)

TRL ID	TRX NUM	PREV PTR	NEXT PTR	OPERATION	TABLE	ROW ID	ATTRIBUTE	BEFORE VALUE	AFTER VALUE

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

