



UNIVERSITY COLLEGE TATI (UC TATI)

FINAL EXAMINATION QUESTION BOOKLET

COURSE CODE	: DCT2053
COURSE	: DATABASE CONCEPTS
SEMESTER/SESSION	: 1-2023/2024
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.

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QUESTION 1

- a) Describe about data and information. (4 marks)
- b) Differentiate between structured and unstructured data. Give **ONE (1)** application that suitable to use each data. (6 marks)
- c) Explain **FOUR (4)** advantages of DBMSs. (8 marks)
- d) List **FIVE (5)** major parts of database environment. (5 marks)

QUESTION 2

- a) List **SIX (6)** stages in database lifecycle. (6 marks)
- b) Explain the function of indexes. Give **TWO (2)** types of indexes that can be applied in database. (4 marks)
- c) List **FIVE (5)** factors of DBMS software selection. (5 marks)

QUESTION 3

- a) Explain **FIVE (5)** facts finding techniques. (5 marks)
- b) The following Table 1 shows that each staff can have many phone numbers which lead to multivalued attributes in one field. Explain **TWO (2)** solutions to overcome these multivalued attributes. (4 marks)

Table 1: Staff Detail

StaffNo	StaffName	StaffPhone
0001	Humaira	0198732821, 0128781234
0002	Nasrul	0178923721, 0117891297, 0129116754
0003	Umar	0117839291

- c) Explain about entity integrity and referential integrity. (4 marks)
- d) Table 2 shows the staff information in first normal form. You must perform normalization up to 3NF as per below requirements:

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Table 2: Staff Information

staffNo	staffName	staffGrade	staffPosition	Dependents	relation	hireDate
CS101	Aliana	TA52	Manager	Syukri	Husband	01/07/2010
CS101	Aliana	TA52	Manager	Humaira	Daughter	01/07/2010
CS102	Aliff	TA45	Assistant Manager	Azura	Wife	15/01/2015
CS102	Aliff	TA45	Assistant Manager	Umar	Son	15/01/2015
CS102	Aliff	TA45	Assistant Manager	Irfan	Son	15/01/2015
CS103	Mariana	TA45	Assistant Manager	Aqil	Husband	01/08/2017
CS104	Sabri	TA52	Manager	Amelia	Wife	15/02/2013
CS104	Sabri	TA52	Manager	Shuib	Son	15/02/2013
CS104	Sabri	TA52	Manager	Hafiz	Son	15/02/2013
CS105	Ziana	TA29	Admin Assistant	Razif	Son	01/01/2018
CS105	Ziana	TA29	Admin Assistant	Azura	Daughter	01/01/2018
CS106	Zaitun	TA48	Accountant	Danish	Son	01/01/2018

- i. Complete dependency diagram (4 marks)
 - ii. List of partial and transitive dependency (2 marks)
 - iii. Second normal form (2NF) (2 marks)
 - iv. Third normal form (3NF) (3 marks)
- e) Draw the Entity Relationship Diagram (ERD) based on 3NF answer in Question 3(d). To gain maximum marks, you must include the all attributes, keys, connectivities and relationship name. (7 marks)

QUESTION 4

- a) Explain the function of the following SQL commands:
- i. CREATE (1 mark)
 - ii. DROP (1 mark)
 - iii. ALTER (1 mark)
 - iv. COMMIT (1 mark)
 - v. UPDATE (1 mark)
 - vi. INSERT (1 mark)

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- b) Write the SQL statements for the given questions based on the following tables:

Table: Student

StudID	StudName	PhoneNo
00101	Uzair	019-8911010
00102	Abu Bakar	013-5679023
00103	Humaira	017-5679011
00104	Umar	019-1109167
00105	Muhammad	012-4567914

Table: Enrollment

EnrollID	RegisterDate	StudID	CourseID	Grade
001	12/1/2023	00101	01	A
002	12/1/2023	00101	02	B+
003	12/1/2023	00101	03	A-
004	13/1/2023	00103	02	C
005	13/1/2023	00104	03	A
006	13/1/2023	00104	04	A-

Table: Course

CourseID	CourseName	Credit
01	Database System	3
02	Programming	3
03	English	2
04	Calculus	4

- i. Display all courses enrolled by StudID '00104'. (2 marks)
- ii. Display all students records order by StudName. (2 marks)
- iii. Display the list of StudName, PhoneNo, CourseName, RegisterDate and Grade. (5 marks)

QUESTION 5

- a) Explain **FIVE (5)** transaction properties. (10 marks)
- b) Describe **THREE (3)** main problems of concurrency control. (6 marks)

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

