UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2009/ 2010

SUBJECT NAME	:	DATABASE
SUBJECT CODE	:	DIT 2044
COURSE	:	2 DIT
EXAMINATION DATE	:	APRIL/MAY 2010
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS.

THIS PAPER CONTAINS FIVE (5) PAGES

PART A

Instruction: State whether each of the following statements is **TRUE** or **FALSE**.

Q1 Some advantages of the database approach consist of control of data redundancy, data consistency, sharing of data and improve security and integrity.

Q2 Relational Database is a collection of normalized relations with distinct relation names.

Q3 Superkey is an attribute, or set of attributes, that uniquely identifies a tuple within a relation.

Q4 Views are not dynamic, meaning that changes made to base relations that affect view attributes are immediately not reflected in the view.

Q5 Views can simplify complex operations on base relations.

Q6 Most components of a SQL statement are case sensitive, except for literal character data.

Q7 All non-numeric literals must not be enclosed in single quotes (e.g. London).

Q8 All numeric literals must not be enclosed in quotes (e.g. 650.00).

Q9 In SQL statements, only **SELECT** are mandatory.

Q10 AS clause is used to name a column.

(10 marks)

PART B

Instruction: Answer **ALL** questions.

Q11 (a) Describe each of the following terms.

(i) Relation

(ii) Tuples

(iii) Attributes

(iv) Domain

(v) Cardinality

(10 marks)

Q12 Create an Entity Relationship Diagram (ERD) for each of the following descriptions by using Unified Modeling Language (UML) notation:

(a) Each company operates four departments and department belongs to one company.

(3 marks)

(b) Each department in **Q13 (a)** employs one or more employees and each employee works for one department.

(3 marks)

(c) Each of the employees in **Q13 (b)** may or may not have one or more dependents and each dependent belongs to one employee.

(3 marks)

(d) Each employee in **Q13 (c)** may or may not have an employment history.

(3 marks)

(e) Represent all the ER models described in **Q13 (a)**, **Q13 (b)**, **Q13 (c)** and **Q13 (d)** as a single ER model.

(2 marks)

Q13 Given the following table:

Table Q13 (a)

Persons

P_Id	LastName	FirstName	Address	City
1	Hansen	Ola	Timoteivn 10	Sandnes
2	Svendson	Tove	Borgvn 23	Sandnes
3	Pettersen	Kari	Storgt 20	Stavanger

Table Q13 (b)

Orders

O_Id	OrderDate	OrderPrice	Customer
1	2008/11/12	1000	Hansen
2	2008/10/23	1600	Nilsen
3	2008/09/02	700	Hansen
4	2008/09/03	300	Hansen
5	2008/08/30	2000	Jensen
6	2008/10/04	100	Nilsen

Write appropriate SQL statement for each of the following statements:

(a) Add a column named "DateOfBirth" in the table **Q13 (a).**

(2 marks)

(b) List the persons living in a city that contains "tav" from the table **Q13 (a).**

(2 marks)

(c) Find the largest value of the "OrderPrice" column based on the table **Q13 (b).**

(3 marks)

(d) According to the **Q13 (b)** table, count the number of orders from "Customer Nilsen".

(3marks)

(e) Find the summation (total order) of each customer based on the table **Q13 (a).**

(5 marks)

Q14   Given the following scenario:

The table below shows a list of sample student/counselor appointment data in a collage. A student is given an appointment at a specific time and date with a counselor located at a particular counseling session. On each day of student appointments, a counselor is allocated to a specific session for that day. Describe and illustrate the process of normalizing the table shown in the table below, to 3NF relations. ldentify the primary, alternate and foreign keys in your 3NF relations. Consider the relational schema below:

Table Q15

Appointment

counselor No	counselorName	stdnNo	stdnName	Appointment		counselingNo
				date	time	
S1011	Tony Smith	P100	Gillian	12-sep-08	10.00	S15
S1011	Tony Smith	P105	Jill Bell	12-Sep-08	12.00	S15
S1024	Helen Pearson	P108	lan MacKay	12-Sep-08	10.00	S10
S1024	Helen Pearson	P108	Ian MacKay	14-Sep-08	14.00	S10
S1032	Robin Plevin	P105	Jill Bell	14-Sep-08	16.30	S15
S1032	Robin Plevin	P110	John Walker	15-Sep-08	18.00	S13

Normalized table **Q15** for each the following form.

(a)   First Normal Form (1NF).

(4 marks)

(b)   Second Normal Form (2NF).

(6 marks)

(c)   Third Normal Form (3NF).

(4 marks)