



**FINAL EXAMINATION
SEPTEMBER 2018 SEMESTER**

SUBJECT CODE : CDS300
SUBJECT NAME : DATABASE SYSTEM
LEVEL : BACHELOR
TIME / DURATION : 3.00 PM – 6.00 PM
(3 HOURS)
DATE : 4 JANUARY 2019

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
 2. This question paper is printed on both sides of the paper.
 3. This question paper consists of TWO (2) sections. Answer ALL questions in the sections.
 4. Please write your answers in the answer booklet provided.
 5. Answer all questions in English.
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THERE ARE FOUR (4) PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A

[TOTAL = 25 MARKS]

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

Define each of the following key terms:

- a. Derived Attributes
- b. Foreign Key

[5 Marks]

Question 2

Degree of a relationship is the number of entity types that participate in it. Explain the **THREE (3)** types of the relationships with the aid of a diagram.

[10 Marks]

Question 3

Define transaction in database. Explain different methods of concurrency control mechanism used in database, with example.

[10 Marks]

SECTION B

[TOTAL = 75 MARKS]

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

CLASS_CODE	CRS_CODE	CLASS_SECTION	CLASS_TIME	ROOM_CODE	PROF_NUM
10012	ACCT-211	1	MAF 8:00-8:50 a.m.	BUS311	105
10013	ACCT-211	2	MAF 9:00-9:50 a.m.	BUS200	105
10014	ACCT-211	3	TTh 2:30-3:45 p.m.	BUS252	342
10015	ACCT-212	1	MAF 10:00-10:50 a.m.	BUS311	301
10016	ACCT-212	2	Th 6:00-6:40 p.m.	BUS252	301
10017	CIS-220	1	MAF 9:00-9:50 a.m.	KLR209	228
10018	CIS-220	2	MAF 9:00-9:50 a.m.	KLR211	114
10019	CIS-220	3	MAF 10:00-10:50 a.m.	KLR209	228
10020	CIS-420	1	W 6:00-8:40 p.m.	KLR209	162
10021	QM-261	1	MAF 8:00-8:50 a.m.	KLR200	114
10022	QM-261	2	TTh 1:00-2:15 p.m.	KLR200	114
10023	QM-362	1	MAF 11:00-11:50 a.m.	KLR200	162
10024	QM-362	2	TTh 2:30-3:45 p.m.	KLR200	162
10025	MATH-243	1	Th 6:00-8:40 p.m.	DRE155	325

- a. Identify the primary key for the table.

[5 Marks]

- b. Identify the foreign key for the table.

[3 Marks]

- c. Draw a relational diagram to show the relationship between the tables.

[7 Marks]

[Total: 15 Marks]

Question 2

You are required to create a conceptual data model of the data requirements for a company that specializes in IT training. The Company has 30 instructors and can handle up to 100 trainees per training session. The Company offers 5 advanced technology courses, each of which is taught by a teaching team of 2 or more instructors. Each instructor is assigned to a

maximum of 2 teaching teams or may be assigned to do research. Each trainee undertakes one advanced technology course per training session.

- a) Identify the main entity types for the company.

[6 Marks]

- b) Identify the main relationship types and specify the multiplicity for each relationship. State any assumptions you make about the data.

[6 Marks]

- c) Using your answers for 2(a) and 2(b), draw a single Entity Relationship Diagram (ERD) to represent the data requirements for the company.

[8 Marks]

[Total: 20 Marks]

Question 3

Write Structured Query Language (SQL) statements for staff table on the following instructions.

Staff_No	Staff_FName	Staff_LName	Staff_Phone	Staff_Email	Staff_Grade
123	Johnson	Timeberlake	0198214121	johnson@gmail.com	DM45
124	Ramli	Ahmad	0124352563	ramli@gmail.com	DM52
125	Rajesh	Kumaresan	0135283563	rajesh@gmail.com	DM45
126	Aiman	Ramzi	0123245123	aiman@gmail.com	DM52
127	Zaleha	Abdullah	0194582476	zaleha@gmail.com	DM45

- a) Create table staff.

[3 Marks]

- b) List only staff with grade *DM45*.

[4 Marks]

- c) List the names and email all staff, alphabetically ordered by *Staff_FName*.

[5 Marks]

- d) List all staff names start with R.

[8 Marks]

[Total: 20 Marks]

Question 4

clientNo	cName	propertyNo	pAddress	rentStart	rentFinish	rent	OwnerNo	oName
CR76	John Kay	PG4	6 Lawrence St, Glasgow	1-Jul-03	31-Aug-04	350	C040	Tina Murphy
		PG16	5 Novar Dr, Glasgow	1-Sept-04	1-Sep-05	450	C093	Tony Shaw
CR56	Aline Stewart	PG4	6, Lawrence St, Glasgow	1-Sep-02	10-June-03	350	C040	Tina Murphy
		PG36	2, Manor Rd, Glasgow	10-Oct-03	1-Dec-04	375	C093	Tony Shaw
		PG16	5 Novar Dr, Glasgow	1-Nov-05	10-Aug-06	450	C093	Tony Shaw

Table above is *ClientRental* list. Based on it, normalize the table into

- a) First Normal Form (1NF)

[10 Marks]

- b) Second Normal Form (2NF)

[10 Marks]

[Total: 20 Marks]

END OF QUESTION PAPER