UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(ONLINE)
SEMESTER I
SESSION 2020/2021

COURSE NAME	:	DATABASE SYSTEM
COURSE CODE	:	BIC 21404
PROGRAMME CODE	:	BIS / BIP / BIW / BIM
EXAMINATION DATE	:	JANUARY/ FEBRUARY 2021
DURATION	:	3 HOURS
INSTRUCTION	:	1. ANSWER **ALL** QUESTIONS 2. PLEASE MAKE SURE TO CLICK "SAVE ANSWER" BUTTON FOR SUBJECTIVE QUESTIONS. OBJECTIVE QUESTIONS ARE SAVED AUTOMATICALLY

THIS QUESTION PAPER CONSISTS OF **FIVE (5)** PAGES

Q1 (a) Answer the following questions based on **Table Q1(a)** and **Table Q1(b)**.

Table Q1(a)

Student			
Stu_ID	**Stu_Name**	**Hometown**	**Id_Num**
100	Amir bin Hamzah	Johor Bahru	980912-01-7821
101	Siti binti Harun	Putrajaya	970121-10-2322
102	Lim Boon Shan	Kuantan	980412 07 8991

Table Q1(b).

Travelling		
Stu_ID	**Entrance_To_campus**	**Interstate_Travel**
100	Yes	No
101	Yes	Yes
102	No	No
100	No	No
101	No	No
102	No	Yes

(i) Write the primary key for the Student.

(2 marks)

(ii) Write composite key for Stud_Name.

(4 marks)

(iii) Write foreign key for any one of the table

(2 marks)

(iv) Write all super key for Student table.

(2 marks)

(b) Many RDBMs enforce integrity rules automatically to ensure that application design conforms to entity and referential integrity rules. Based on the information given in **Q1(a),** identify the enforcement of integrity rules that can be implemented in **Table Q1(a)** and **Table Q1(b)** by giving **ONE (1)** example in terms of:

(i) Entity integrity.

(2 marks)

(ii) Reference integrity.

(2 marks)

(c) Based on **Table Q1(a), Table Q1(b)** and **Table Q1(c)**, show the new relation that will be produced by using the following relational algebra operator. State NONE if there is no relation that will be produced.

Table Q1(c)

Department	
Department	**Skill**
Information Technology	Programming
Manufacturing	Assembly

(i) PRODUCT between *Student* and *Department*

(2 marks)

(ii) INTERSECT between *Student* and *Department*.

(2 marks)

(iii) DIFFERENCE between *Student* and *Department*

(2 marks)

Q2 Answer the questions based on the following scenario:

A database designer has design an Entity Relationship Diagram (ERD) for a College at Parit Raja. The college is divided into several schools, departments, courses, classes, rooms, professors and students.

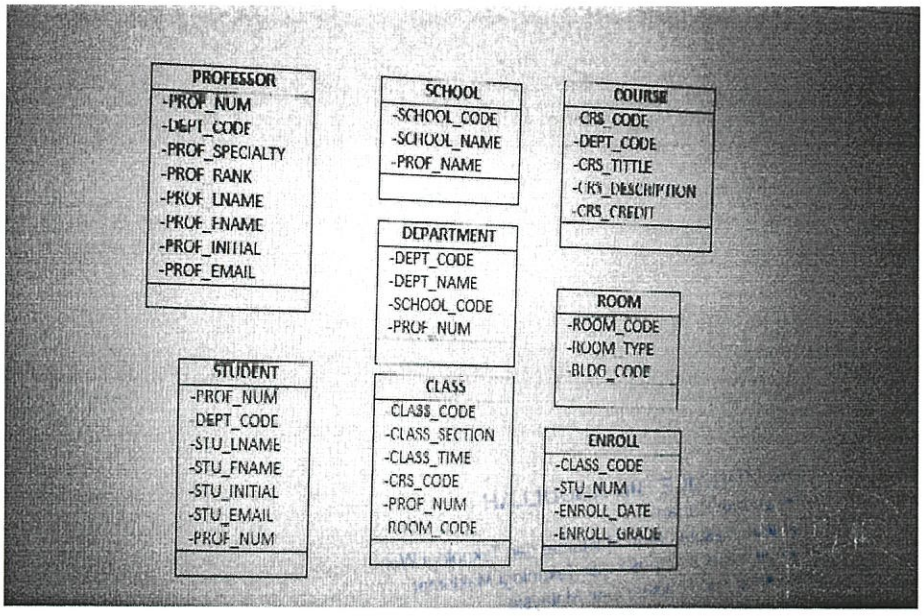

Figure Q2

(a) Without adding new attributes, identify the relational database keys and relationship within the relational database for **Figure Q2**. Redraw the **Figure Q2** into the booklet sheet.

(16 marks)

(b) Identify the limitations and provide **TWO (2)** best practice solutions of ERD in **Figure Q2**.

(4 marks)

Q3 Tesco Parit Raja database contains the following four relations as shown in **Figure Q3.**

```
Details (CustNum, Cusname, Address, Date, Time)
Customers (CustNum, FName, LName, Address, HomePhoneNum, MobileNum)
Location (CustNum, Address, Date)
Condition (CustNum, Temperature)
```

Figure Q3

(a) List all the details of Tesco Parit Raja customers. Note that "Parit Raja" may occur anywhere in their address, rather than just at the end.

(3 marks)

(b) List Customer details of Tesco Parit Raja customers who had entered Tesco and sort by the descending order of customer name.

(3 marks)

(c) List the details of customer whose temperature is greater than 39 degree Celsius. Then, use the information to track their location.

(4 marks)

(d) List all customers' detail.

(5 marks)

Q4 Consider the order form as shown in **Figure Q4**. Convert the order form into relation for a set of UNF, 1NF, 2NF and 3NF relations. Show the primary key and foreign key in resulting relations clearly.

Invoice			
Date: 10/10/2020			
Invoice Number:	10007		
Customer No.:	C050		
Customer Name:	Adam Amin		
Customer Address:	No. 1, Jalan Universiti, Parit Raja, Batu Pahat, Johor.		
Payment Due:	10/11/2020		
Product Name	**Quantity**	**Unit Price**	**Total Price**
Camera	15	RM200	RM3000
Speaker	10	RM50	RM500
		Grand Total	RM 3500

Figure Q4

(25 marks)

-END OF QUESTION-