UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(ONLINE)
SEMESTER II
SESSION 2019/2020

COURSE NAME	:	DATABASE SYSTEM
COURSE CODE	:	BIC 21404
PROGRAMME CODE	:	BIS / BIP / BIW / BIM
EXAMINATION DATE	:	JULY 2020
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 **SIX (6)** PAGES

TERBUKA

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

Table Q1(a)

Employee			
Emp_ID	**Emp_Name**	**Address**	**IdentityCard_Num**
100	Amin bin Hamzah	Johor Bahru	880912-01-7821
101	Siti binti Harun	Putrajaya	900121 10 2322
102	Lim Boon Shan	Kuantan	850412-07-8991

Table Q1(b)

Salary		
Emp_ID	**Salary_Month_Year**	**Amount**
100	Jan-2020	RM10,000
101	Jan-2020	RM11,000
102	Jan-2020	RM12,000
100	Feb-2020	RM10,000
101	Feb-2020	RM11,000
102	Feb-2020	RM12,000

(i)   Find the primary key for Employee.

(1 marks)

(ii)   Composite key for Salary.

(2 marks)

(iii)   Foreign key for any one of the table.

(1 marks)

(iv)   ALL Super key for Employee table.

(1 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 of 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 *Employee* and *Department*.

(2 marks)

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

(2 marks)

(iii)   DIFFERENCE between *Employee* and *Department*.

(2 marks)

Q2 A database design has design an Entity Relationship Diagram (ERD) for a College at Parit Raja. The staffs are lecturer who need to do research and supervising student. The students need to register subject course and attend the course schedule.
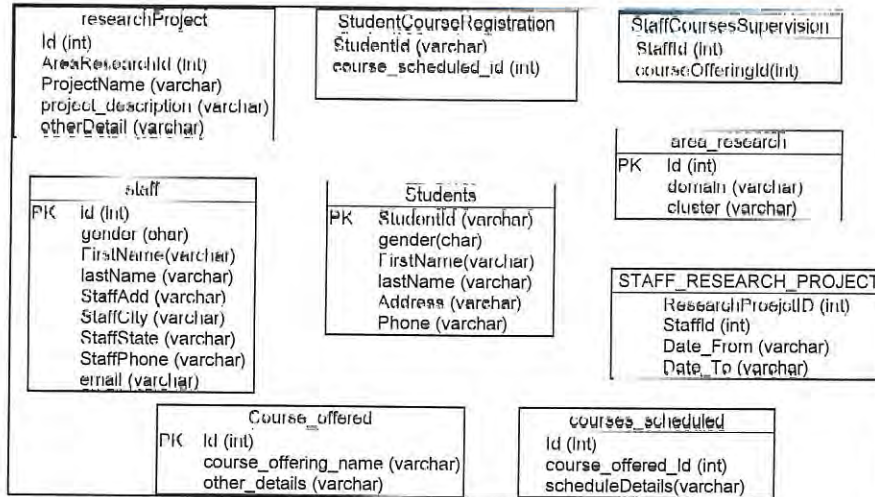

Figure Q2

(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) **Figure Q2** does not follow **TWO (2)** best practices design of ERD. Identify the limitations and provide the best practice solutions.

(4 marks)

Q3   VideoStore database contains the following seven relations as shown in **Figure Q3.**

> Movies (<u>MovieNum</u>, Title, YearReleased)
> Stars (<u>StarId</u>, GivenName, FamilyName)
> ActsIn (<u>StarId, MovieNum</u>)
> Copies (<u>BarCode</u>, MovieNum, Format, RentalCode)
> RentalRates (<u>RentalCode</u>, RentalPeriod, Rate)
> Customers (<u>CustNum</u>, FName, LName, Address, HomePhoneNum, MobileNum)
> Rentals (<u>CustNum, BarCode</u>, DateDue, DateReturned)

Figure Q3

(a)   List all the details (i.e. all columns) of Parit Raja customers who do not have a home phone number. Note that "Parit Raja" may occur anywhere in their address, rather than just at the end

(3 marks)

(b)   List the year-released and title (only) of each movie that was released after the end of 2015 but before the end of 2019. List this information in ascending order of year-released, and then by alphabetical order of title whenever the year-released is the same.

(3 marks)

(c)   List the number copies of movies that are recorded in the database, include the oldest YearReleased, the most recent YearReleased and the distinct different YearReleased values are there in the database.

(4 marks)

(d)   List the titles and year released of all movies that Brad Pitt is in.

(5 marks)

(e)   What are the given and family names of stars who are in four or more movies, and how many movies are they in?

(5 marks)

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

Invoice			
Invoice Number:	I001	Date:	01/01/2020
Customer Number:	C0001		
Customer Name:	Maslan		
Customer Address:	No 1, Jalan Parit Raja		
City-Country:	Parit Raja, Malaysia		
Payment Due:	01/02/2020		

Product Name	Quantity	Unit Price	Total Price
Polaroid Headphone	2	RM89.00	RM178.00
Powerbank	10	RM52.00	RM520.00
Gmax Tablet	10	RM399.00	RM3990.00
		Grand Total	RM4688.00

Figure Q4

(25 marks)

- END OF QUESTION-