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UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2022/2023**

COURSE NAME : DATABASE SYSTEM
COURSE CODE : BIT 20803
PROGRAMME CODE : BIT
EXAMINATION DATE : JULY/AUGUST 2023
DURATION : 3 HOURS
INSTRUCTION : 1. ANSWER ALL QUESTIONS.
2. THIS FINAL EXAMINATION IS CONDUCTED VIA **CLOSED BOOK**.
3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK.

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

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TERBUKA

- Q1** (a) How relevant is the data warehouse in today's context? (4 marks)
- (b) Describe transactional data and an example. (4.5 marks)
- (c) How enterprise data are related to database. (4 marks)

Q2 Answer Q2(a) – Q2(d) based on **Figure Q2**.

Table name: EMPLOYEE					
Emp#	Emp title	Emp name	Emp Initial	Emp DOB	Store Code
1	Mr.	Haris	M	21/5/1980	3
2	Ms.	Hana	N	13/4/1985	2
3	Ms.	Farah	J	12/9/1989	4
4	Mrs.	Rozy	M	21/10/1989	5
5	Mr.	Smith	F	1/8/1988	3
6	Mr.	Hannan	K	12/2/1990	1
7	Mr.	Fendi	A	10/7/1987	3
8	Ms.	Kelly	L	17/11/1985	1
9	Mr.	Harun	A	23/3/1986	2
10	Mrs.	Rebecca	F	10/1/1984	4
11	Mr.	Salim	H	12/12/1990	3

Table name: STORE				
Store Code	Store name	Store Sales	Region Code	Emp#
1	Linc	1003455.76	2	8
2	Junction	1421987.39	2	12
3	Fourfront	986783.22	1	7
4	Tupleview	944568.56	2	3
5	Keypoint	29300098.45	1	15

Table name: REGION	
Region Code	Region Desc
1	East
2	West

Figure Q2

- (a) For each table, identify the primary key and the foreign key(s). (2.5 marks)
- (b) Explain entity integrity with an example from **Figure Q2**. (4 marks)
- (c) Explain referential integrity with an example from **Figure Q2**. (4 marks)
- (d) Create an Entity Relationship Diagram (ERD) to show the relationship between **EMPLOYEE**, **STORE** and **REGION**. (7 marks)



- Q3** (a) Write a Structured Query Language (SQL) statement based on **Figure Q3(a)** for **Q3(a)(i) – Q3(a)(iv)**.

```
emp(eno, ename, bdate, title, salary, dno)
proj(pno, pname, budget, dno)
dept (dno, dname, mgreno)
workson (eno, pno, resp, hours)
```

Figure Q3(a)

- (i) The employees (name only) in department 'D1' ordered by descending salary.
(5 marks)
- (ii) The project name, department name, and budget for all projects with a budget less than RM50,000.
(5 marks)
- (iii) The employee numbers and salaries of all employees in the 'Consulting' department ordered by descending salary.
(5 marks)
- (iv) The employee's name, project name, employee title, and hours for all works on records.
(5 marks)
- (b) Create an ERD using the Crow's Foot notation for the business rules in **Figure Q3(b)**.

- A patient can make many appointments with one or more doctors in the clinic, and a doctor can accept appointments with many patients. However, each appointment is made with only one doctor and one patient.
- Emergency cases don't need an appointment. An emergency is recorded in the appointment book as "unscheduled".
- Each patient visit creates a bill. Each patient visit is billed by one doctor, and each doctor can bill many patients.
- Each bill must be paid. However, a bill may be paid in many installments, and a payment may cover more than one bill.
- A patient may pay the bill directly, or the bill may be the basis for a claim submitted to an insurance company.

Figure Q3(b)

(10 marks)

Q4 Answer Q4(a) – Q4(c) based on Figure Q4.

ATTRIBUTE NAME	SAMPLE VALUE	SAMPLE VALUE	SAMPLE VALUE	SAMPLE VALUE	SAMPLE VALUE
Stu_Num	21134	200128	199876	199876	223456
Stu_Lname	Stephan	Smith	Jones	Orlean	McKnowy
Stu_Major	Accounting	Accounting	Marketing	Marketing	statistics
Dept_Code	Acct	Acct	Mktg	Mktg	Math
Dept_Phone	4356	4356	4378	4378	3420
College_name	Business Admin	Business Admin	Business Admin	Business Admin	Art & Sciences
Advisor_Lname	Gary	Gary	Bently	Tillery	Chen
Advisor_office	T201	T201	T228	T356	J331
Advisor_bldg	Tiny Building	Tiny Building	Tiny Building	Tiny Building	Centre Building
Advisor_phone	2115	2115	2123	2159	3209
Stu_GPA	3.67	2.78	2.31	3.45	3.58
Stu_Hours	75	45	117	113	87
Stu_Class	Junior	Sophomore	Senior	Senior	Junior

Figure Q4

- (a) Write the relational schema and draw its dependency diagram. Identify all dependencies, including a transitive dependency. (10 marks)
- (b) Perform data normalization process to meet the Third Normal Form (3NF) requirements. (15 marks)
- (c) Draw the Crow's Foot ERD using the results from Q4(b). (15 marks)

- END OF QUESTIONS -

