UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(ONLINE)
SEMESTER II
SESSION 2020/2021

COURSE NAME	:	GEOGRAPHICAL INFORMATION SYSTEM
COURSE CODE	:	BFG40803
PROGRAMME CODE	:	BFF
EXAMINATION DATE	:	JULY 2021
DURATION	:	3 HOURS
INSTRUCTIONS	:	ANSWER **ALL** QUESTIONS

TERBUKA

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

Q1 (a) **Describe** and **explain** three different models of a database: hierarchical, network and relational. **Lists** their advantages and disadvantages. You may use diagrams.

(13 marks)

(b) Object oriented database management system (OO-DBMS) is becoming a trend nowadays. **Define** what an OO-DBMS is. **Describe** and **explain** four key constructs which are closely related to the object-oriented concept used by an OO-DBMS

(12 marks)

Q2 (a) Conducting needs assessment is the initial phase in developing a GIS. **Define** what a needs assessment is.

(3 marks)

(b) **Describe** and **explain** four different information outputs of a needs assessment.

(10 marks)

(c) With an example of a Universiti Tun Hussien Onn 's GIS database, **describe** and **explain** what are a Data Flow Diagram and a Master Data List.

(12 marks)

Q3 A conceptual data model (e.g. ER Diagram) of a GIS database is crucial and must be produced before the development of any GIS database. Figure 1 shows an example of an Extended Entity Relationship (ER) Diagram for the 'National Park's geospatial database'. Referring to Figure 1:

(a) **Explain** all notations /components within Figure 1's ER Diagram.

(10 marks)

(b) This Extended ER Diagram is later on translated to be a Geodatabase. **Define** and **explain** what a Geodatabase is. Describe each Geodatabase elements

(15 marks)

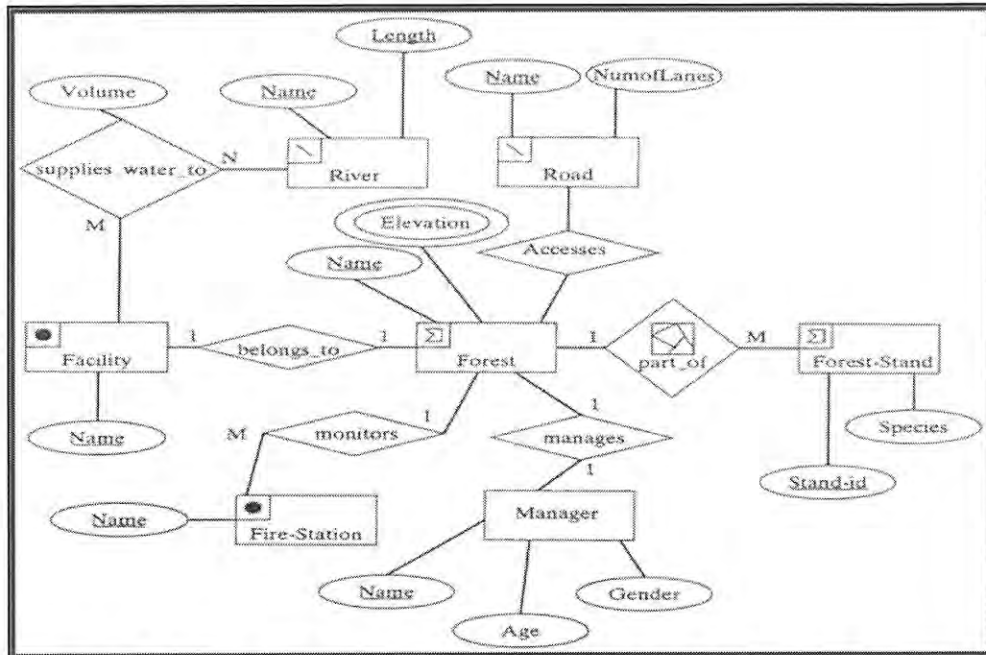**CONFIDENTIAL**

Figure 1: Extended ER Diagram for the 'National Park's geospatial database'

Q4   **EMPLOYEE (Empno, Ename, Job, Manager, Hiredate, Salary, Commission, Deptno)**

DEPARTMENT (Deptno, Dname, Location)

Two database tables' structures are presented as above. Using Structured Query Language (SQL):

(a)   **Write** the SQL statement for **listing** the entire attributes of table EMPLOYEE with its data type.

(2 marks)

(b)   **Write** the SQL statement for **creating** the table structure of EMPLOYEE table.

(5 marks)

(c)   Assuming a table structure has been created for table DEPARTMENT, **write** the SQL statement for **populating** the first two rows of table DEPARTMENT with no null values.

(4 marks)

(d)   **Write** an SQL statement for **showing** the annual salary of each employee with an annual bonus of RM 1,000 for each of them. Rename the annual salary + bonus column as 'Annual Salary'.

(4 marks)

(e)   **Write** an SQL statement for **listing** each employee where the job is either LECTURER or PROFESSOR and their salary must be equal or above RM 5,000. Sort the result in descending order of their hire date.

<div align="right">(5 marks)</div>

(f)   **Write** an SQL statement to **show** the location of each employee where the employee name starts with the letter 'M'.

<div align="right">(5 marks)</div>

- END OF QUESTIONS -