



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA
FACULTY OF COMPUTING
DEPARTMENT OF COMPUTER SCIENCE
2025_2 EXAMINATIONS

Course Code: CIT 703

Course Title: Information Technology and Software Development

Credit: 3 units

Time allowed: 3 Hours

Instruction: Answer Questions **ONE (1)** and any other **THREE (3)** Questions

Question 1

A multinational corporation uses a hierarchical database system causing issues like data redundancy and inefficiencies. As a data management expert,

- a. Outline the main steps involved in migrating from a hierarchical database system to a relational database model. **7 Marks**
- b. Describe the process of implementing a basic data warehouse for improved data analysis. **8 Marks**
- c. Explain three key practices for ensuring data integrity, security, and quality in data management. **8 Marks**
- d. List and briefly describe three benefits of adopting Extreme Programming (XP) in software development. **2 Marks**

Question 2

- a. In the context of software development, what is process and software process Model? **3 Marks**
- b. State six goals of software process. **3 Marks**
- c. State the eight (8) Gargín's dimensions of software quality. **4 Marks**
- d. Explain any two (2) of the following:
 - i. Role Software Process Model **2 ½ Marks**
 - ii. Data-Flow Software Process model **2 ½ Marks**
 - iii. Work Flow Software Process Model **2 ½ Marks**

Question 3

- a. Explain the concept of an Entity Relationship (ER) Diagram? **5 Mark**
- b. In Fig. 3Qb., is an ER diagram for a school database. Student is an entity. Describe each type of attributes in the entity as shown in Fig. Q3b. **4 Marks**
- c. Describe the different types of relationships that can exist between entities in an ER diagram, providing examples for each type. **6 Marks**

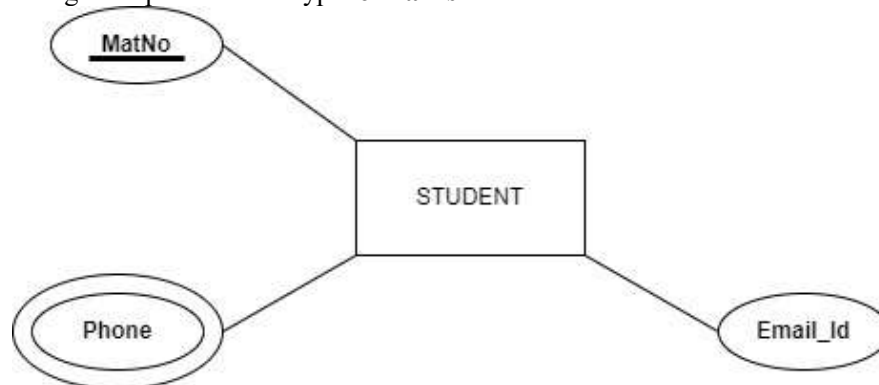


Fig. Q3b

Question 4

- a. Explain the following concepts
 - i. Data warehousing **2 Marks**
 - ii. Meta-data **1 Mark**
 - iii. Data mining **2 Marks**
 - iv. Online Analytical Processing (OLAP) in a Data Warehouse **2 Marks**
- b. State the differences between Network and Hierarchical Database Model **5 Marks**
- c. In a Network Model, explain the difference between record and set. **3 Marks**

Question 5

- a. What is a class diagram? **1 Mark**
- b. With the aid of a diagram, explain how you will create a class diagram for an Online Customer Order Management System (COMS). **8 Marks**
- c. Explain with an example each, any two (2) UML relationships. **6 Marks**

Question 6

- a. Explain the following terms:
 - i. State **1 Mark**
 - ii. Transition network **1 Mark**
 - iii. Transitions **1 Mark**
- b. Draw and state the standard symbols used in state charts. **4 Marks**
- c. Develop a state transition chart for a login system that goes into idle state after 1 minute and automatically logout after 3 minutes of being the idle state. **8 Marks**