



**NATIONAL OPEN UNIVERSITY OF NIGERIA**

University Village, Plot 91, Jabi Cadastral Zone, Nnamdi Azikiwe Expressway, Abuja

**FACULTY OF SCIENCES**

**Computer Science Department**

**2023\_1 POP EXAMINATION<sub>231</sub>**

Course Code: **CIT302**

Course Title: **Data Mining and Data Warehousing**

Credit: **3 Units**

Time Allowed: **2½ hours**

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

**Questions One (25 Marks) – Compulsory**

- 1 (a) Enumerate any three (3) applications of the information or knowledge extracted by data mining. **(3 marks)**
- 1 (b) Describe any four (4) of the common classes of tasks in data mining. **(6 marks)**
- 1 (c) Describe any three (3) components of a typical data mining system. **(6 marks)**
- 1 (d) Distinguish between *Online Transaction Processing (OLTP)* and *Online Analytical Processing (OLAP)* by completing any ten (10) rows in the table below. **(10 marks)**

Feature	OLTP	OLAP
<i>Characteristic</i>		
<i>Orientation</i>		
<i>User</i>		
<i>Function</i>		
<i>DB design</i>		
<i>Data</i>		
<i>Summarization</i>		
<i>View</i>		
<i>Unit of work</i>		
<i>Access</i>		
<i>Focus</i>		
<i>Operations</i>		
<i>No. of records accessed</i>		
<i>No of users</i>		
<i>DB size</i>		
<i>Priority</i>		
<i>Metric</i>		

## **Question Two**

- a) Define Data Mining and list four of its key properties. **(5 marks)**
- b) Data mining functionalities are used to specify the kinds of patterns to be found in data mining tasks. Briefly describe any four (4) of the data mining functionalities. **(10 marks)**

## **Question Three**

- a) Describe any five (5) of the following data mining technologies:
- i. Neural Networks
  - ii. Decision Trees
  - iii. Rule Induction
  - iv. Genetic Algorithms
  - v. Discriminant Analysis
  - vi. Generalized Additive Models (GAM)
- (10 marks)**
- b) Fully discuss two (2) reasons why On-Line Analytical Mining (OLAM) (also called OLAP mining), is important.
- (5 marks)**

## **Question Four**

- a) Define data warehousing. **(4 marks)**
- b) Give three (3) advantages of a Data Warehouse. **(3 marks)**
- c) With many data mining system products available on the market, one may ask, "What kind of system should I choose?" List four (4) and explain two (2) of the features on which the choice of data mining systems should depend.
- (8 Marks)**

## **Question Five**

- a) List any six (6) tasks in building a data mining database.

**(3 marks)**

b) Enumerate two (2) examples (or use cases) for each of the following:

- Data Mining for Financial Data Analysis.
- Data Mining for the Retail Industry.
- Data Mining Applications in Telecommunications.
- Data Mining for Biological Data Analysis.

**(8 marks)**

c) A successful data warehouse starts with understanding the users and their needs. List the four (4) categories of data warehouse users.

**(4 marks)**

### **Question Six**

a) List six (6) categories of data/information on which data mining can be applied.

**(3 marks)**

b) Briefly discuss the three (3) types of data warehouse applications.

**(6 marks)**

c) Provide six (6) differences between Data Warehouses (OLAP) and Operational Database Systems (OLTP).

**(6 marks)**