



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja**  
**FACULTY OF SCIENCE**  
**DEPARTMENT OF COMPUTER SCIENCE**

**DAM 301:**

**Credit Units: 2**

**Instruction:** Answer Question (1) (25marks) and any other three questions each carrying 15 marks

**Time: 2 hours**

- 1a) What do you understand by schema? **(1 mark)**
- b) In the context to a data warehouse, describe the following: **(5 marks)**.
- (i) star schema
  - (ii) snowflake schema
  - c) Discuss a data cube **(3 marks)**
  - d) Explain the OLAP operations slice and dice in relation to a data cube **(2 marks)**.
  - d) Suppose that a data warehouse consists of three dimensions time, doctor and patient, and two measures count (the number of patients examined) and charge (fee that a doctor charges a patient for a visit).
- (i) Draw a star schema for the above data warehouse **(8 marks)**.
- (ii) Starting with the base cuboid [day, doctor, patient], what specific OLAP operations should be performed in order to list the total fee collected by each doctor in 2013? **(3 marks)**
- (iii) Starting with the base cuboid [day, doctor, patient], what specific OLAP operations should be performed in order to list the total fee paid by patient Claire Citizen in the years 2012 and 2013 combined? **(3 marks)**
- 2a) In data warehouse technology, a multiple dimensional view can be implemented by a relational database technique (ROLAP), or by a multidimensional database technique (MOLAP), or by a hybrid database technique (HOLAP). Briefly describe each implementation technique and its advantages and disadvantages. **(8 marks)**
- b) What are the objective measures for an association rule? Briefly explain each. **(7 marks)**
- 3a) Discuss the apriori algorithm for finding frequent itemsets. **(9 marks)**
- b) Explain clearly how the Apriori algorithm reduces computation cost. **(3 marks)**
- c) Distinguish between supervised learning and unsupervised learning giving an example of each **(3 marks)**
- 4a) What do you understand by data mining functionalities? **(2 marks)**

- b) Briefly explain any five data mining functionalities and the variety of knowledge they discover. **(10 marks)**
- 5a) What do you understand by the term data mining? **(1½ marks)**
- b) List and explain in chronological order the steps involved in knowledge discovery in databases. **(10½ marks)**
- c) Mention six factors used in measuring the quality of a data. **(3 marks)**
- 6a) List and explain the common types of data preparation method **(6 marks)**
- b) What are the reasons for data pre-processing **(3 marks)**
- c) Briefly discuss the roles of data mining in the following application areas: **(6 marks)**
- i) Science and engineering
  - ii) Business
  - iii) Transportation.