



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.