NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91 CADASTRAL ZONE, NNAMDI AZIKWE EXPRESSWAY, JABI, ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF COMPUTER SCIENCE
2021_2₄₅₆₇₈

COURSE CODE: DAM 344
COURSE TITLE: SEMANTIC DATA MODELLING
COURSE CREDIT: 2 UNITS
TIME ALLOWED: 2 HOURS
INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER THREE (3) QUESTIONS

QUESTION 1
1ai.   Briefly describe the term data modelling. *(3 marks)*

ii. List and explain the types of data modelling. *(2 marks)*

bi. Define the term relationship. *(2 marks)*

ii. List and explain the characteristics of a relationship. *(6 marks)*

iii. Describe the three (3) **types** of entities. *(3 marks)*

c. List and describe any three (3) kinds of a data model instance. *(9 marks)*

QUESTION 2
2a.   A shared data model has three (3) identified challenges that have to be overcome. List and explain these challenges. *(6 marks)*

b.   Mention and briefly describe the three Business Semantic Management product suite. *(4.5 marks)*

c.   Enumerate the semantic gaps a shared data model in XML and UML does NOT cover. *(4.5 marks)*

QUESTION 3
3a.   Differentiate between the **HM-Data** and **HC-Data Models.** *(4 marks)*

b.   State the advantages of HC-Data Model over its logical data-modelling pendant. *(3 marks)*

c.   Briefly describe the WBT-Master architecture and list the tools that a WBT-Master provides. *(8 marks)*

QUESTION 4

4a.   Fill in the blanks in the SQL query below. The query is expected to display the number of students in the individual departments that are residing in Enugu and "0" if no student in a department resides in this city. *(4.5 marks)*

> *CREATE VIEW temporal (deptNo, number) AS*
> *(i._____ department.deptNo, COUNT (stdNo)*
> *FROM ii._____, department*
> *WHERE student.deptNo = iii._____*
> *AND student.city = iv._____*
> *v._____ department.deptNo)*
> *UNION*
> *SELECT deptNo, 0 FROM department WHERE vi._____*
> *NOT IN*
> *SELECT deptNo FROM vii._____ WHERE town = Enugu));*
>
> *SELECT dept# FROM viii._____ WHERE ix._____*
> *IN (SELECT MIN (number) FROM temporal);*

b.   List and tabulate five (5) SQL query and manipulation commands. *(2.5 marks)*

c.   State six (6) database security considerations that needs to be applied when using semantic data. *(6 marks)*

d.   List two properties of the Varchar2 data type. *(2 marks)*

QUESTION 5

5a.   State the three (3) uses of data modelling. *(3 marks)*

b.   List and explain the benefits of data modelling. *(6 marks)*

c.   Explain the two (2) standout modelling methodologies. *(6 marks)*