



**NATIONAL OPEN UNIVERSITY OF NIGERIA,
PLOT 91, CADASTRAL ZONE, UNIVERSITY VILLAGE, JABI – ABUJA
FACULTY OF SCIENCES**

APRIL 2019 EXAMINATION

COURSE CODE: DAM344

COURSE CREDIT: 2

COURSE TITLE: SEMANTIC DATA MODELLING

TIME ALLOWED: 2 Hours

INSTRUCTIONS: Answer question 1 and any other three (3) questions

- 1a. A common term employed in semantic data modelling is “characteristic”. Give a detailed explanation of this term. **(6 marks)**
- 1b. State the two (2) main requirements that apply for specifications of URIs and storage of semantic data in a database. **(2 marks)**
- 1c. Use a well labelled diagram to illustrate the idea of Relational Model and Relationships. **(6 marks)**
- 1d. Explain the following concepts with respect to semantic data modelling:
- i. Identifier
 - ii. Modifier } 2 marks each; 2 x 3 = **6 marks**
 - iii. Descriptor
- 1e. State the three (3) major ways in which relationships are characterised **(3 Marks)**
- 1f. Write the data types that are supported by the Value-based matching of the following lexical forms.
- i. xsd:string
 - ii. xsd:decimal) 1 mark each; 1 x 2 = **2 marks**
- [Total = 25 marks]**
- 2a. Describe any five (5) database security considerations that apply to the use of semantic data **(10 marks)**
- 2b. The term ‘Semantic Annotation’ is often used in data modelling. Give a brief explanation of this term. **(4 marks)**
- 2c. State the relevance of the Semantic Annotation. **(1 mark)**
- [Total = 15 marks]**
- 3a. Write short notes on the following:
- i. Hypertext **(4 marks)**
 - ii. Hypermedia **(4 marks)**
- 3b. Explain the two (2) main classifications of hypermedia systems in terms of how much control authors should have over the form of the hypermedia presentation **(4 marks)**

3c. Complete the blank cells with the description of the listed commands. (3 **marks**)

Command	Description
Update	
Cascade	
Delete	

[Total = 15 marks]

4a. Discuss the following terms:

i. Inferencing (4 **marks**)

ii. Rules (4 **marks**)

4b. In a tabular form, present the two main (2) distinctions between HM-Data Model and HC-Data Model. (4 **marks**)

4c. Write down the data types that are supported by the Value-based matching of the following lexical forms.

i. xsd:datetime

ii. xsd:date

iii. Everything else

) 1 **mark** each

[Total = 15 marks]

5a. Discuss any two (2) common factors that influence the effectiveness of semantic modelling. (10 **marks**)

5b. In the context of Data Modelling , explain the term 'Relationship' (4 **marks**)

5c. Give a concise description of the term 'rule-base'. (1 **mark**)

[Total = 15 marks]