



NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SCHOOL OF SCIENCE AND TECHNOLOGY
MAY/JUNE 2012 EXAMINATION

CIT 427 Database Systems and Management

Time Allowed: 3hrs

Instruction: Answer any five (5) questions.

1a. List any five (5) forms of operations in a relational algebra. (10 marks)

1b. State the Cartesian product for the relations d_1 and d_2 . (2 marks)

1c. Depict and state the specific roles of each component of the web services architecture by means of a well-labelled diagram. (8 marks)

2a. Give a brief explanation of the following typical attributes:

- i. A list of names)
- ii. CDATA)
- iii. Entity or Entities)
- iv. ID) (2 marks each, Total=12)
- v. IDREF or IDREFS)
- vi. NMTOKEN or NMTOKENS)

2b. Write down the four (4) main components of an entity-relationship diagram with their corresponding roles (8 marks)

3a. State the main function and example of the following predefined internal entities:

- i. `<`
- ii. `>`
- iii. `&`
- iv. `'`
- v. `"`

(2 marks each, Total=10 marks)

3b. By means of a well-labelled diagram, explain how weather information can be accessed by means of Web services. (10 marks)

4a. Who is a database administrator? (2 marks)

4b. List and explain five duties of a database administrator. (10 marks)

4c. Describe where and how security is maintained in a database. (4 marks)

4d. Data manipulation can be described in four (4) different ways, write down these ways. (4 marks)

5. Go through the code below carefully and answer the questions that follow:

```
<?xml version="1.0"?>
<freshplay>
<burns>Say <quote>goodday</quote>,
Shola.</burns>
<allen><quote>Goodday,
Shola.</quote></allen>
<applause/>
</freshplay>
```

5a. What sort of processing instruction is depicted above (2 marks)

5b. Specify the main role of this instruction (6 marks)

5c. Define an empty element in the context of documents (4 marks)

5d. Identify and write the empty element in this instruction (2 marks)

5e. Write short notes on instances requiring document type declaration. (6 marks)

6a. State the syntax for deletion in SQL. (5 marks)

6b. Give two (2) main functions of the check clause. (5 marks)

6c. Distinguish between a domain constraint and a key constraint. (5 marks)

6d. Specify two (2) modes of inserting data into a relation. (5 marks)

7a. Give four (4) reasons why the data definition language is vital in databases. (4 marks)

7b. State the three (3) main components of an SQL expression. (6 marks)

7c. If a department in a school is denoted by d, write the expression to find the names of all departments in a school relation. (6 marks)

7d What is the main function of a select clause? (4 marks)