THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

HIGHER DIPLOMA IN COMPUTER STUDIES

END OF SEMESTER EXAMINATIONS

APRIL/MAY 2010 SERIES

DATA BASE & DATA COMMUNICATIONS

TIME: 2 HOURS

<u>**Instructions to Candidates**</u>

1. Answer a total of **THREE** Questions.
2. Answer **ALL** Questions from Section **A**
3. **ONE** Question from Section **B** and **ONE** from Section **C.**

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SECTION A (ATTEMPT ALL QUESTIONS)

Question ONE

(a).   Define database.   **(2 Marks)**

(b).   Briefly explain the major components of SQL.   **(3 Marks)**

(c).   State **TWO** advantages and **TWO** disadvantages of using SQL in Relational Database.
(4 Marks)

(d).   Briefly explain the UPDATE clause as used in database systems.   **(2 Marks)**

(e).   Differentiate between the DELETE and the DROP clauses in SQL Language.   **(4 Marks)**

(f).   Distinguish between physical and logical topology giving an example of each.   **(4 Marks)**

(g).   Explain the following:
    (i).   Packet switching
    (ii).   Circuit switching

(4 Marks)

(h).   Distinguish between 'layer two address' and 'layer three address'.   **(2 Marks)**

(i).   List the **SEVEN** layers of the Open Systems Interconnection (OSI) layers in correct order.
(2 Marks)

(j).   Briefly describe 'Cyclic Redundancy Check'.   **(3 Marks)**

SECTION B - (ANSWER ANY ONE QUESTION)

Question TWO

The following table form part of a database held in a relational DBMS.

Table Name	Fields
Hotel	Hotel_no, name, address
Room	Room_no, Hotel no., type, price
Booking	Guest_no, Hotel no., Date_from, date_to, room no
Guest	Guest_no, name, address

Where the fields underlined are the primary keys and/or foreign keys.

(a).   Write SQL statement to that will create the tables listed in the above table.   **(8 Marks)**

(b).   Write SQL statements to add at least a record in each table created in Question above.
(8 Marks)

(c).   Write SQL statements to alter the price of all rooms by 5% increment.   **(4 Marks)**

Question THREE

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(a). (i). Deduce an SQL statement to retrieve the table below: **(6 Marks)**

Staff_Number	First_Name	Sir_Name	Position	Salary
Mpuc002	John	Brand	Manager	300,000
Mpuc003	Margaret	Joakim	Manager	250,000
Mpuc005	Noel	Steven	Manager	251,000

(ii). From the same table in Question (i) above, write an SQL statement that sorts the Table by staff number in a descending order. **(4 Marks)**

(iii). Write an SQL statement to remove the table from the Database. **(2 Marks)**

(b). Using an appropriate example, describe any **FOUR** comparison operators used in SQL.
(4 Marks)

(c). Explain how the ORDERED BY clause is used in databases. **(4 Marks)**

SECTION C (Answer any ONE Question from this Section

Question FOUR (20 Marks)

(a). With aid of diagram describe the format of the Basic IEEE 802.3 data frame. **(10 Marks)**

(b). Describe the methods used by TCP protocol to ensure reliable transmission of data.
(10 Marks)

Question FIVE (20 Marks)

(a). Describe the Media Access Control protocols used by the Ethernet. **(5 Marks)**

(b). Explain how Ethernet networks deal with collisions. **(4 Marks)**

(c). Explain the use of port numbers. **(4 Marks)**

(d). Distinguish between synchronous and asynchronous transmission. **(2 Marks)**

(e). Briefly describe the access interfaces to the ISDN. **(4 Marks)**