JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

DEPARTMENT OF INFORMATION SYSTEMS AND TECHNOLOGY

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN SECURITY AND FORENICS

3RD YEAR 1ST SEMESTER 2018/2019 ACADEMIC YEAR

MAIN CAMPUS

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COURSE CODE: IIS 3316

COURSE TITLE: DATA MANAGEMENT

EXAM VENUE: **STREAM: BIS**

DATE: DECEMBER 2018   **EXAM SESSION:**

TIME: 2.00 HOURS

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INSTRUCTIONS:

1. **Answer Question 1 (Compulsory) and ANY other two questions**
2. **Candidates are advised not to write on the question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION ONE   **[30 MARKS]**

(a) Briefly explain why *data management* is considered a priority concern to any business organization in the current world.   [4 Marks]

(b) Structured Query Language (SQL) is viewed as a defacto database query language to Relational Database Management Systems (RDBMS). Use a suitable example to demonstrate the relevance of SQL in data management.   [4 Marks]

(c) Most IT organizations are struggling with hiring and maintaining at least one database administrator (DBA) to handle vast amount of database in their custody.

    (i)   Do you agree with the statement above? Support your answer.   [2 Marks]

    (ii)   From this statement, it is evident that an organization may have more than one DBA. Name and explain specific role of any TWO types of DBA applicable here. [4 Marks]

    (iii)   Provide any two factors that can guide hiring of more than one DBA as in Q(c)(ii) above.
                                                                    [2 Marks]

(d) Mavuno Data Company Ltd plan to purchase a database software (DBMS) to handle database of their growing sales. Briefly explain suitable strategy they can adopt to choose the best DBMS for their organization.   [4 Marks]

(e) Differentiate between implementation data model and physical data model.   [4 Marks]

(f) Explain briefly the circumstances that a REPEATABLE READ isolation level can be considered while managing data of an organization.   [4 Marks]

(g) Below is a SQL statement retrieved from HR database of a certain organization.

        SELECT * FROM Employee WHERE position in ('ACCOUNTANT',
        'MANAGER') ORDER BY EmpName;

(i) Is there any error in the SQL statement above? Explain your answer.   [3 Marks]

(ii) Suppose *index* exists on the name column, briefly explain how the query can be used to avoid sorting.   [3 Marks]

QUESTION TWO   **[20 MARKS]**

(a) Identify any three goals of logical data modeling as it applies to database design. [6 Marks]

(b) Decisions made during the database design process and the Application Development Life Cycle (ADLC) must be reviewed to ensure correctness. Discuss.   [10 Marks]

(c) Advise on suitable data recovery plan for an enterprise-level database system.   [4 Marks]

QUESTION THREE   **[20 MARKS]**

(a) Bunista Sacco Society Ltd plans to purchase an application that they can use in handling loan activities for their members. Consider yourself having been approached by their manager to offer technical advice. Adopt the five data requirement steps including the main form and subform queries in your advice.   [10 Marks]

(b) SQL:2003 supports discretionary authorization using the CREATE/DROP ROLE statement and the GRANT/REVOKE statement. For each, use a suitable example to demonstrate this.

                                                                      [10 Marks]

QUESTION FOUR   **[20 MARKS]**

(a) "It is important to note that selection and evaluation process involves a detailed assessment of an organization's needs and features of candidate Database Management System (DBMS)". Using a DBMS of your choice for a specified company, discuss in support of this statement. [10 Marks]

(b) Object DBMSs support additional functionalities for transaction processing and data mart applications. Many information systems use richer set of data types that are provided by relational DBMSs. While considering specific case, discuss the above statement.   [10 Marks]

QUESTION FIVE   **[10 MARKS]**

(a) DBMS ensures that transactions obey certain properties. Discuss the FOUR main properties referred to here. For each case, provide a practical example.   [8 Marks]

(b) While citing suitable example in each case, explain any two perspectives of data warehouse performance management.   [4 Marks]

(c) Using SQL *Plus, define a customer type and a typed customer table. A customer has fields for the unique customer number, the name, the address, the phone, and the e-mail address. The address field is a row type with fields for street, city, state, and postal code. The phone field is a row type with fields for country code, area code, and local number. You can define types for the address and phone so that the types can be reused. Both the *Customer* type and table have no parent.   [8 Marks]

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