



## **MACHAKOS UNIVERSITY**

**Special/Supplementary Examinations 2017/2018**

**EXAMINATION FOR THE DEGREE OF BSC (IT)**

**SIT 202: DATABASE MANAGEMENT SYSTEMS**

**DATE: AUGUST 2018**

**TIME: 2 HOURS**

**Instructions: Answer Question One and Other Two Questions.**

### **Question 1 (30 Marks) [Compulsory]**

- Distinguish between OLAP and OLTP in relation to databases (4 marks)
- Explain two functions of DBMS (4 marks)
- Give the difference between a DDL and DML with examples in each case (4 marks)
- Discuss two data models that you can use when designing a database for Machakos University. (4 marks)
- Briefly describe three categories of database users (6 marks)
- Draw a Conceptual Diagram for Machakos Level 5 hospital database that captures four entities and appropriate relationships. (5 marks)
- State three rules for creating tables in the relational database model. (3 marks)

### **Question 2 (20 marks)**

- Mark wants to design tables to be used in a given database. Using well labelled diagrams explain three types of entity relationships that he can use in the design. (10 marks)
- Schema is a way of logically grouping database objects. Discuss three types of database schema that can be used for this purpose. (10 marks)

### **Question 3 (20 marks)**

Write SQL Queries for performing the following tasks:

- Create a database called Machakos University (2 marks)
- Call the database above for further manipulation (2 marks)
- Create two tables called Students and Lecturers with three fields of your choice. (6 marks)
- Set an appropriate field in the students table as the primary key (2 marks)

- e. Insert two records into each of the above tables. (4 marks)
- f. Display the last two records from students table and the first two from the lecturers table. (4 marks)

**Question 4 (20 marks)**

- a. Describe the five components of the DBMS environment and discuss how they relate to each other. (10 marks)
- b. Distinguish between the logical and physical database schema. (4 marks)
- c. Erick, a database administrator is supposed to protect the database from various threats. Advise him on three methods he can use to perform this task. (6 marks)

**Question 5 (20 marks)**

- a. Normalization is a technique that is used to organize tables so as to reduce redundancy. Briefly discuss the process of normalization from first up to the third normal forms. (10 marks)
- b. A systems administrator wants to organize files in the machines that exist in their work place. Explain five file organization methods that he may use. (10 marks)