



MACHAKOS UNIVERSITY

University Examinations for 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

**SECOND YEAR SECOND SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

SIT 202: DATABASE MANAGEMENT SYSTEMS

DATE: 5/12/2017

TIME: 2:00 – 4:00 PM

INSTRUCTIONS: Answer Question ONE and any other TWO Questions

QUESTION ONE (30 MARKS) (COMPULSORY)

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

QUESTION TWO (20 MARKS)

- a) 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)
- b) 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 THREE (20 MARKS)

Write SQL Queries for performing the following tasks:

- a) Create a database called Machakos University (2 marks)
- b) Call the database above for further manipulation (2 marks)
- c) Create two tables called Students and Lecturers with three fields of your choice.(6 marks)
- d) 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 FOUR (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 FIVE (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)