MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

…….YEAR ……. SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

BACHELOR OF SCIENCE (STATISTICS AND PROGRAMMING)

BACHELOR OF (COMPUTER SCIENCE)

BACHELOR OF SCIENCE (MATHEMATICS)

SMA392/SCO206/SIT250: DATABASE SYSTEMS

DATE: **TIME:**

INSTRUCTIONS: Answer Question ONE and other TWO Questions

QUESTION ONE (COMPULSORY)(30 MARKS)

a) List five database management system software used in industry today (5 marks)

b) Analyze four types of database users. (4 marks)

c) Discuss five reasons why you would advise a company to go for a database management system other any other data management system. (5 marks)

d) Using clear examples, illustrate the application of three sql languages (6 marks)

e) Illustrate the step by step process of generating a report from Ms access table. (4 marks)

f) In a transaction, explain three aspects that a DBMS should guarantee with respect to concurrent execution of several transactions and database consistency (6 marks)

QUESTION TWO (20 MARKS)

a) List six MS access database objects (6 marks)

b) List four roles of a database administrator, which make the officer vital in a database management system (DBMS) (4 marks)

c) Discuss the three levels of schema architecture. (6 marks)

d) Differentiate the following (4 marks)

i. Logical and physical data independence

ii. Single user and multi user systems.

QUESTION THREE (20 MARKS)

a) Justify the importance of adding indexes in a table (2 marks)

b) List the four phase involved in query processing (4 marks)

c) Study the following table and answer the following questions:

Index	PatientID	PatientName	PatientCategory	DOB	MaritalStatus	DisabiltyType	HomeCounty

Write the SQL script to do the following:

i) Create the above table (4 marks)

ii) Inserts this values in the table(1,0023, John, Adult, 12/12/1970, Single, None, Narok) (3 marks)

iii) Displays all patients with disabilities in the table (3 marks)

iv) Adds a constraint to avoid repetition of PatientID (4 marks)

QUESTION FOUR (20 MARKS)

a) Define a database model (2 marks)

b) Analyze four database models used in database systems (8 marks)

c) Explain five reasons for having a database model. (10 marks)

QUESTION FIVE (20 MARKS)

a) Define data normalization and explain why it is important in database design (2 marks)

b) Study the following table and answer the questions that follow.

Std_no	Name, Tel_No	Campus, Town	Department	HoD	Office_Tel
401	Jane, 0721545	Main, Kenya	CIT	Mr. X	53337
402	Kamau, 077120	Main, Kenya	ENG	Mr. Y	53341
403	Kioko,0721125	Main, Nairobi	CIT	Mr. X	53337
404	Lenku, 072564	Town, Kericho	ENG	Mr. Y	53337

i). Normalize the above table to the 3NF showing all the proceeding forms (15 marks)

ii). State the three main differences between 1NF, 2NF and 3NF tables (3 marks)