MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE)

SCO 206: DATABASE SYSTEMS

DATE: **TIME:**

INSTRUCTIONS:

Answer Question ONE and other TWO Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

a)   Distinguish between database and data mart   (4 marks)

b)   Explain two properties of business rules essential for a database system   (4 marks)

c)   Give the difference between physical design and logical design with examples in each case   (4 marks)

d)   Explain the following database concepts

     i)   SQL

     ii)   Normalization   (4 marks)

e)   Define an ER diagram and design a suitable ER diagram for Machakos county database using three entities.   (6 marks)

f)   State four database models that can be used in the architecture of database systems.
                                                                                                          (4 marks)

g)   Explain two constraints that may be set when creating tables to be used in a database.

                                                                                                          (4 marks)

QUESTION TWO (20 MARKS)

Technical Limited has contracted Erispe IT Solutions Company to develop a database for managing all the resources of the company.

    i)   Discuss the process the company is most likely to follow to professionally develop that database system.   (10 marks)

    ii)   Design an Entity Relationship Diagram that can be used to model the database in 2 i. above.   (10 marks)

QUESTION THREE (20 MARKS)

a)   Explain five merits of using an electronic database in a given organization as opposed to a manual database.   (10 marks)

b)   Discuss five DDL language commands used in SQL.   (10 marks)

QUESTION FOUR (20 MARKS)

a)   Normalization is a technique that is used to organize tables and data in a database. Discuss five reasons why normalization is important.   (10 marks)

b)   A systems administrator wants to secure the database system for the organization. Explain five security methods that he may use apart from using passwords.   (10 marks)

QUESTION FIVE (20 MARKS)

a)   Jack has been contracted to set up a database system at Machakos Company. Discuss the main components that he is likely to put together in the system.   (10 marks)

b)   When database diagnosis is done a number of threats to its security may be established. Discuss any five of these.   (10 marks)