



MACHAKOS UNIVERSITY

University Examinations for 2017/2018

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SECONDSEMESTER EXAMINATION FOR BACHELOR OF SCIENCE (MATHEMATICS AND COMPUTER SCIENCE) BACHELOR OF SCIENCE IN COMPUTER SCIENCE

SCO 206: DATABASE 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 knowledge and information (4 marks)
- b) Explain two functions of a database management system (4 marks)
- c) State four types of keys that can be used in a relation. (4 marks)
- d) Explain the following concepts in relation to databases
- e) Briefly describe three reasons for normalizing a database (6 marks)
- f) Draw an E-R Diagram for Ruiru Hospital that captures the following entities: Patients, Doctors, Assistants and Wards. (5 marks)
- g) State three database management systems. (3 marks)

QUESTION TWO (20 MARKS)

- a) Jack wants to design tables to be used in a given database. Explain three types of entity relationships that he can use in the design. (6 marks)
- b) Models are used to represent the architecture of various systems. Discuss four types of database models that can be implemented in database design. (8 marks)
- c) State six advantages of a computerized database over the traditional file system. (6 marks)

QUESTION THREE (20 MARKS)

- a) Show, giving appropriate SQL commands, step by _step how you would go about:
- i. Creating a database called Machakos with a table named **Employee** (attributes: Code, No, Name and Rate) in SQL. (4 marks)
 - ii. Adding two records in each table. (4 marks)
 - iii. Displaying names and rates employees (2 marks)
- b) James wants to design a database for a given set up. Discuss all the steps in the database design cycle that he is supposed to follow. (6 marks)
- c) State four qualities of a good database design. (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) Explain four benefits of database normalization. (8 marks)
- b) Discuss three types of relationships that can be implemented in databases using well labelled diagrams. (6 marks)
- c) Explain three factors that affect the selection of a database management system.(6 marks)