



MACHAKOS UNIVERSITY COLLEGE

University Examinations 2017/2018

SUPPLEMENTARY EXAMINATION AND BSC (COMPUTER SCIENCE)

SCO206: DATABASE SYSTEMS

DATE: AUGUST 2018

TIME: 2 HOURS

Instructions: Answer Question ONE and any other TWO Questions

Question 1 (30 Marks) [Compulsory]

- a. Distinguish between data and information (4 marks)
- b. Explain two objectives of a database system (4 marks)
- c. Give the difference between a DDL and DML with examples in each case (4 marks)
- d. Explain the following database concepts
 - i. OLTP
 - ii. OLAP (4 marks)
- e. Briefly describe three vulnerabilities of a database system (6 marks)
- f. Draw an E-R Diagram for MU that captures the following entities: Students, Lecturers, Library and Computer Lab. (4 marks)
- g. State three categories of a database user. (4 marks)

Question 2 (20 marks)

- a. Jack 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. Models are used to represent the architecture of various systems. Discuss five types of database models that can be implemented in database design. (10 marks)

Question 3 (20 marks)

- a. Describe the three unique components of the DBMS environment and discuss how they relate to each other. (6 marks)
- b. Explain four types of indices used in databases (8 marks)

d. 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 4 (20 marks)

- a. Distinguish between the following:
 - i. Primary key and foreign key
 - ii Inner join and right join (8 marks)
- b. Explain three types of data schema used in databases (6 marks)
- c. Discuss three constraints that can be used in database tables (6 marks)