



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

SECOND YEAR SECOND TERM EXAMINATION FOR

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

DATABASE MANAGEMENT SYSTEMS

DATE: 9/6/2021

TIME: 2.30-5.30 PM

INSTRUCTIONS

Answer any five questions

QUESTION ONE (20 MARKS)

- a) Differentiate between sequential file access method and direct file access method. (4 marks)
- b) Explain each of the following concepts in the context of the relational data model.
 - i. relation (1 mark)
 - ii. tuple (1 mark)
- c) Outline two reasons for normalization. (2 marks)
- d) Identify two limitations of traditional file systems and state how such limitations have been addressed by the database approach. (4 marks)
- e) Janet, a database administrator is supposed to protect the database from various threats. Advise her on two methods she can use to perform this task. (4 marks)
- f) Stating an example in each case outline the difference between a DDL and DML (4 marks)

QUESTION TWO (20 MARKS)

- a) Explain each of the following concepts in the context of the relational data model.
 - i. domain (2 marks)
 - ii. relational database. (2 marks)
- b) Stating an example in each case, distinguish the term changeable data from dynamic data. (4 marks)
- c) Explain two advantages and two disadvantages of DBMSs. (8 marks)
- d) Explain the important role played by users in the process of database design. (4 marks)

QUESTION THREE (20 MARKS)

- a) Outline four main tasks carried out by the Database Administrator (DBA). (4 marks)
- b) Identify four threats that could affect a database system. (4 marks)
- c) State two rules for creating tables in the relational database model. (2 marks)
- d) Describe what relationships represent in an ER model and provide examples of unary, binary, and ternary relationships. (10 marks)

QUESTION FOUR (20 MARKS)

- a) Define the following terms in the context of Database Management Systems.
 - i. Block (2 marks)
 - ii. Data dictionary (2 marks)
 - iii. Distributed database (2 marks)
- b) Explain the following in terms of providing security for a database.
 - i. authorization (2 marks)
 - ii. backup (2 marks)
 - iii. encryption (2 marks)
- c) Using examples, state the use of the following SQL keywords. (8 marks)
 - i. CREATE
 - ii. DROP
 - iii. SELECT
 - iv. INSERT INTO

QUESTION FIVE (20 MARKS)

- a) Explain the relational data model. (4 marks)
- b) A systems administrator wants to organize files in the computers that exist in their work place. Explain two file organization methods that he may use. (4 marks)
- c) Croy has been employed as a database administrator by Bentam (K) Ltd. She is mandated to develop a database system for the company.
 - i. measures she could incorporate into the system to protect the company data. Outline the process she could follow to achieve this mandate. (6 marks)
 - ii. Explain two benefits the system could bring to the company. (4 marks)
 - iii. Identify two security (2 marks)

QUESTION SIX (20 MARKS)

- a) Describe the stages of the database system development lifecycle. (6 marks)
- b) Explain the term, database as used in database management systems. (4 marks)
- c) Describe two components of the DBMS environment. (6 marks)
- d) Identify the two major components of SQL and state their functions. (4 marks)

QUESTION SEVEN (20 MARKS)

- a) Citing an example in each case, explain two types of attributes in a relational database system. (6 marks)
- b) Describe what attributes represent in an ER model and provide examples of simple, composite, single-value, multi-value, and derived attributes. (12 marks)
- c) Write the following abbreviation in full.
SQL (2 marks)