



MACHAKOS UNIVERSITY

University Examinations for 2021/2022

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY
THIRD YEAR SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY) AND
BACHELOR OF (STATISTICS AND PROGRAMMING)
SIT301: DATABASE ADMINISTRATION

DATE:

TIME:

INSTRUCTIONS: Answer Question ONE and other TWO Questions

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Highlight four roles of a database administrator. (4 marks)
- b) Given user A and user B are transacting and updating record in the same table, with the aid of a diagram, simulate a lost update as a result of an inconsistent read. (6 marks)
- c) Illustrate two Database authentication methods in a Local Area Connection. (4 marks)
- d) While creating a database, an administrator can use various methods. Discuss three such methods (6 marks)
- e) In a busy network operation center, there have been several cases of security breach. You have been hired as a consultant to help settle the matter. Discuss three approaches you would use to seal the loopholes. (6 marks)
- f) You have been hired as a database administrator in a data center. The center is being set up for the first time. Highlight four factors you would consider as you create the database. (4 marks)

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION TWO (20 MARKS)

- a) Enumerate four key security features which every database management software should have. (4 marks)
- b) While setting REMOTE_LOGIN_PASSWORDFILE, several aspects must be taken into account. Discuss three which can be set on this parameter and their implication. (6 marks)
- c) Explain the role of the following in integrity control (10 marks)
 - (i) Views
 - (ii) Integrity Controls
 - (iii) One type Domain
 - (iv) Assertions
 - (v) Triggers

QUESTION THREE (20 MARKS)

- a)
 - i) List three causes of flawed user authentication. (3 marks)
 - ii) Propose two methods to solve user authentication flaws in database management systems. (4 marks)
- b) List four database system actions which can be assigned to a subject to execute on an object. (4 marks)
- c) Imagine you are employed in a large telecom company as the database administrator. A natural catastrophe happens which damages all your data. Discuss four Mechanisms which you could employ to facilitate restoration of a database quickly and accurately after the incidence (4 marks)
- d) While creating a database, DBCA is very useful in some circumstances. Discuss three advantages of using DCA in database creation. (6 marks)

QUESTION FOUR (20 MARKS)

- a) Explain five back up facilities in a database management system. (5 marks)
- b) Discuss the journalizing aspect of a database system. (5 marks)
- c) Discuss four aspects of database system that a database administrator needs to monitor. (4 marks)

- d) Define the following terms as they relate to database administration (6 marks)

- (i) Tablespace
- (ii) Instance
- (iii) Data dictionary
- (iv) Redo log
- (v) Shema
- (vi) Timestamp

QUESTION FIVE (20 MARKS)

- a) Highlight **four** levels of locks. (4 marks)
- b) Databases are bound to fail due to various factors. Simulate **four** responses that a database administrator can choose to respond to the failure. (8 marks)
- c) Discuss the following terms (4 marks)
 - i. Concurrency control
 - ii. Serializability
- d) With the aid of a diagram, illustrate how roll forward database recovery works.(4 marks)