



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SECOND SEMESTER EXAMINATION FOR
BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

SIT 301: DATABASE ADMINISTRATION

DATE: 24/4/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS

Answer **question ONE** and any other **TWO** questions.

QUESTION ONE (30 MARKS) (COMPULSORY)

- a) List 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. (12 marks)
- c) As an organization grows, there is need to establish a data warehouse. State **four** key roles of a data warehouse administrator. (4 marks)
- d) 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 the approaches you would use to seal the loopholes. (10 marks)

QUESTION TWO (20 MARKS)

- a) Discuss five key security features which every database management software should have. (10 marks)
- b) 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) List four causes of flawed user authentication. (8 marks)
- b) Propose two methods to solve user authentication flaws in database management systems. (4 marks)
- c) List four database system actions which can be assigned to a subject to execute on an object. (4 marks)
- d) List four Mechanisms to facilitate restoration of a database quickly and accurately after loss or damage (4 marks)

QUESTION FOUR (20 MARKS)

- a) Explain five back up facilities in a database management system. (10 marks)
- b) Discuss the journalizing aspect of a database system. (5 marks)
- c) Database performance is determined by several parameters. Determine five aspects of database system that a database administrator needs to monitor. (5 marks)

QUESTION FIVE (20 MARKS)

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