

MACHAKOS UNIVERSITY
SCHOOL OF ENGINEERING
COMPUTING AND INFORMATION TECHNOLOGY DEPARTMENT
SUPPLIMENTARY EXAM
SIT301: DATABASE ADMINISTRATION

Time: 2 hours

Instructions:

Answer question one and any other two questions.

Question 1: *(compulsory)*

- a). List four competencies which a database administrator should have to do his work effectively. (4mks)
- b). Given user Brian and user Ben are transacting and updating record in the same table, with the aid of a diagram, illustrate a lost update as a result of an inconsistent read. (12mks)
- c). As an organization grows, there is need to establish a data warehouse. State **four** key roles of a data ware house administrator. (4mks)
- 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. (10mks)

Question 2:

- a). Discuss four database failure responses under the following circumstances. (8mks)
 - i. Aborted transactions
 - ii. Incorrect data
 - iii. System failure (database intact)
 - iv. Database destruction
- b). Discuss the following terms concurrency control and Serialization as applied database management (4mks)
- c). Highlight **four** levels of locks. (4mks)
- d). Differentiate shared lock and an exclusive lock. (4mks)

Question 3:

- a). Explain five back up facilities in a database management system. (10mks)
 - b). Discuss the journalizing aspect of a database system where it creates an audit trail. (10mks)
- (4mks)

Question 4:

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

Question 5:

- a). Discuss five key security features which every database management software should have. (10mks)
- b). Explain the role of the following in integrity control (10mks)
 - i. Views.
 - ii. Integrity Controls:
 - iii. One type Domain.
 - iv. Assertions.
 - v. Triggers.