



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY

SIT 301: DATABASE ADMINISTRATION

DATE: FRIDAY, 30TH MARCH 2012

TIME: 2.00 P.M. – 4.00 P.M.

INSTRUCTIONS:

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

Question 1

- a) Explain the following terms as used in databases management systems:
- i. Snapshot;
 - ii. Concurrency control;
 - iii. Recovery;
 - iv. Replication;
 - v. Mirroring;

[10 marks]

- b) Explain the following database management file types:
- i) Primary file;
 - ii) Secondary file;
 - iii) Transaction log file.

[6 marks]

- c) (i) Describe the term *transaction* as used in database management systems.

[2 marks]

- (ii) Explain four properties that a transaction should maintain.

[12 marks]

Question 2

- a) Write an sql code that could be used to carry out the following instructions:
- (i) Create a snapshot on a database named student. [6 marks]
 - (ii) Restore the student database from the snapshot created in (i) above. [4 marks]
- b) Explain the advantages of a database snapshot. [4 marks]
- c) Explain the procedure of attaching and detaching a database on a Ms sql server. [6 marks]

Question 3

- a) Distinguish between *Client-server* and *distributed* database system architectures [6 marks]
- b) Explain the advantages and disadvantages distributed database management systems. [8 marks]
- c) Integrity of data store in a database is key element of information security. Describe the following constraints that could be imposed on a database to ensure the integrity of data is maintained.
- (i) Business constraints;
 - (ii) Entity constraints;
 - (iii) Referential constraint.
- [6 marks]

Question 4

- a. It is pointless to develop a system which has fantastic interface but which is extremely slow in response to a request that is required. Explain the **three** approaches that could be put in place to improve the performance of a database system. [9 marks]
- b. Explain the following characteristics of data security.
- (i) Confidentiality;
 - (ii) Integrity;
 - (iii) Availability
- [6 marks]
- c. In a database, concurrency control can be achieved by the process of locking.
- (i) Explain the term *locking*.
 - (ii) Explain the following types of locking:
 - I. Exclusive locking;
 - II. Shared locking.
- [5 marks]

Question 5

- (a) Information stored in a database system is a valuable asset of organization, thus it must be protected. Describe any **four** security feature that could be put in place to enhance the security of information: [12 marks]
- (b) Explain the following types of database recovery procedure:
- (i) Duplicate database;
 - (ii) Rollback recovery;
 - (iii) Rollforward recovery
 - (iv) Reprocessing transaction.

[8 marks]