# CHUKA UNIVERSITY

## UNIVERSITY EXAMINATIONS

**SECOND YEAR EXAMINATION FOR THE AWARD OF DIPLOMA IN COMPUTER SCIENCE**

**COSC 0251: DATABASE SYSTEMS II**

**STREAMS:** **TIME: 2 HOURS**

**DAY/DATE:WEDNESDAY 6/12/2017** **2.30 P.M – 4.30 P.M**

**INSTRUCTIONS:**

- **Answer question one and any other two from section B**
- **Do not write on this paper**

**SECTION A {compulsory}**

**QUESTION ONE (30MKS).**

a) Describe how database management systems have enhanced storage and access of information by solving the following problems that were associated with conventional file-processing systems in each case give at least one example. (14marks).

i. Data redundancy and inconsistency.
ii. Difficulty in accessing data.
iii. Data isolation.
iv. Integrity.
v. Atomicity.
vi. Concurrent access anomalies.
vii. Security.

b) State any THREE advantages of 3-tier architecture (3marks)
c) State any THREE database application programs (3marks).
d) Define database replication (2 marks)
e) Identify any two differences between differential and incremental backups. (4 marks).
f) State any four person's physical characteristics that are used as a basis for identification in biometric-based authentication (4marks)

**QUESTION TWO (20MKS)**

a)
   i. What is databackup? (2 marks)
   ii. Briefly describe any two types of data backup (4marks)

b) Describe the following security threats that an organization conducting business online may face (8marks).
   i. Phishing
   ii. Spoofing
   **iii.** Sniffing**.**
   iv. SQL injection.

c) Describe four main types of transparency in a DDBMS (6marks).

**QUESTION THREE (20MKS).**

a) State any two backup devices known to you (2marks)

**b)** Discuss any three advantages and three disadvantages of a distributed database system (6marks).

c) Discuss any four limitations of file-based approach (8marks).

d) Differentiate between :

i. Asynchronous and synchronous replication (4marks).

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**QUESTION FOUR (20MKS).**

a) The consistency and reliability aspects of transactions are due to the "acidity" properties of transactions. Discuss each of these properties (8marks)

b) Discuss the following database replication methods
   i. Snapshot replication (4 marks)
   ii. Merging replication (4marks)
   iii. Transactional replication (4 marks).

**QUESTION FIVE (20MKS).**

a) Discuss the following terms (4marks).
   i. Distributed Database Management Systems
   ii. Client-server architecture.

b) Briefly explain how authentication can be used as a security measure for a database server. (3marks).

c) Explain any five biometric methods used for server authentication. (10 marks).

d) Differentiate distributed database from distributed database management system (3marks).

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