

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

FIRST YEAR SECOND SEMESTER EXAMINATION FOR THE AWARD
OF DIPLOMA IN COMPUTER SCIENCE

COSC 0150: DATABASE SYSTEMS 1

STREAMS: DIP. COMP.SCI

TIME: 2 HOURS

DAY/DATE: THURSDAY 11/4/2019

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS

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

SECTION A {compulsory}

QUESTION ONE (30 MKS)

a) Explain the following terms;

- i. Database (1 mark)
- ii. SQL (1 mark)
- iii. Relational database (1 mark)

b) Compare and contrast;

- i. Primary key and foreign key (2 marks)
- ii. DDL and DML (2 marks)

c) Why would you advise a client to use DBMS as opposed to a file based system in his/her premises (4 marks)

d) Discuss the three levels of data abstraction (6 marks)

e)

- i. What is meant by degree of relationship? (1 mark)
- ii. Explain the different degrees of relationship (6 marks)

f) Differentiate between

- i. A relation and a relationship (2 marks)
- ii. Entity type and an instance of an entity (2 marks)
- iii. Weak and strong entity (2 marks)


SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION.

QUESTION 2 (20MARKS)

- a) Describe the goals of database systems (6 marks)
- b) With the aid of an appropriate illustration briefly describe the three level database architecture (6 marks)
- c) Integrity checks on data items can be divided into 4 groups state and briefly describe each (8 marks)

QUESTION THREE (20MARKS).

- a) Why is it important that a database management system have a backup and a recovery component? (4 marks)
- b) Write SQL statement that would produce the CUSTOMER table below with the following data types (8 marks)

Column Name	Data Type	ALLOW NULL
 CustomerId	int	<input type="checkbox"/>
CustomerNumber	int	<input type="checkbox"/>
LastName	varchar(50)	<input type="checkbox"/>
FirstName	varchar(50)	<input type="checkbox"/>
AreaCode	int	<input checked="" type="checkbox"/>
Address	varchar(50)	<input checked="" type="checkbox"/>
Phone	varchar(20)	<input checked="" type="checkbox"/>
		<input type="checkbox"/>

- c) Write an SQL command that would do each of the following
 - i. Create a new database for bonus payments and name it BONUS. (4 marks)
 - ii. Display all records and columns from the CUSTOMER_INFO table. (4 marks)

QUESTION 4 (20MARKS)

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- a) Briefly describe the FOUR (4) properties of transactions (8 marks)
- b) With aid of an appropriate example describe the term referential integrity (7 marks)
- c) Explain FIVE (5) properties of relational databases (5 marks)

QUESTION FIVE (20MKS)

- a) Explain what is meant by Data modeling (2 marks)
 - b) Discuss the different types of data independence (6 marks)
 - c) Database security is increasingly becoming important in almost every enterprise. Chuka University ICT manager has requested your advice on several issues on how to make the ERP database more secure. More specifically, he wants you to advice on what counter measures he should employ to counter security threats.
 - i. What is a security threat? (1 mark)
 - ii. Discuss the factors that he should consider to determine the counter measures to employ (4 marks)
 - iii. What is a view? (1 mark)
 - iv. Explain how views could be used to provide security in a database (4 marks)
 - v. Discuss how entity integrity constraints contribute to database security (2 marks)
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