

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATIONS FOR BACHELOR OF APPLIED COMPUTER SCIENCE

SUPPLEMENTARY / SPECIAL EXAMINATION

ACSC 351: INTRODUCTION TO DATABASES

STREAMS: BSC (AAPPLIED. COMP SCI)

TIME: 2 HOURS

DAY/DATE: TUESDAY 17/11/2020

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS:

- Answer Question **ONE** and any other **TWO** questions.
- Diagrams should be used whenever they are relevant to support an answer.
- Write your answers legibly and use your time wisely

SECTION A: COMPULSORY

QUESTION 1: [30 MARKS] COMPULSORY

- Using examples, explain **THREE** categories of database concurrency control mechanisms (6 marks)
- Explain **FIVE** functions of a relational database management system (5 marks)
- Using SQL, write the procedure of creating a **CUSTOMER** table with the following data types (5 marks)

	Column Name	Data Type	Allow Nulls
▶	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"/>

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- d. Using a diagram, explain a 3 tier database architecture (5 marks)
- e. Outline FOUR disadvantages of hierarchical database models (4 marks)
- f. Explain FIVE problems that could arise if a database is not in 1st normal form (5 marks)

SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION 2: [20 MARKS]

- a) below is information provided by a college to aid in developing their database, use it to answer the questions below:-

A college consists of a number of departments. Each department offers several courses. A number of modules make up each course. Students enrol in a particular course and take modules towards the completion of that course. Each module is taught by a lecturer from the appropriate department, and each lecturer tutors a group of students

- i) Draw an ER diagram of the above information, (7 marks)
 - ii) Add cardinality of the relationships to the ER diagram above (5 marks)
- b) With relevant examples explain THREE Benefits of the database approach to organizations (6 marks)
 - c) Discuss the relevance of concurrency control in databases (2 marks)

QUESTION 3: [20 MARKS]

- a) Explain TEN operations that SQL can perform on relational database (10 Marks)
- b) You have been called upon to develop strategies for database security, Discuss FIVE factors that you would put in place when developing the security strategies for the database. (10 marks)

QUESTION 4: [20 MARKS]

- a) Using sketches, explain FOUR mappings of cardinalities. (6 marks)
- b) Outline FOUR disadvantages of databases in business (4 marks)
- c) Explain the following concepts and each of their benefit in a relational database
 - i) Tuple
 - ii) Fields
 - iii) Attribute domain
 - iv) Relational key
 - v) Relational instance (10 marks)

QUESTION 5: [20 MARKS]

- a) Outline THREE characteristics of oracle database system. (6 marks)
- b) Write SQL queries which will extract the following information from a database: -
i) Delete column *student_name* from table *student_details*
ii) Display all students with *First_name* "Kenneth" from table *student_details* (4 marks)
- c) Explain the importance of the following files in oracle databases
i) Control files
ii) Archive log files
iii) Parameter files (6 marks)
- d) Explain the functions of the following items in database environment
i) Database schema
ii) Inheritance (4 marks)
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