SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

Higher National Diploma in Information Technology
Second Year, First Semester Examination – 2019
HNDIT 2321 / IT3201: Advanced Database Management System

Instructions:
Answer any five questions.
Time: Three hours

No. of Pages	03
No of Questions	:06

Question 01

I.	What is a Database System?	[02 Marks]
II.	Briefly explain the Components of DBMS Environment	[10 Marks]
III.	State two advantages of Relational Database Model	[04 Marks]
IV.	State the components of database system.	[04 Marks]

[Total 20 Marks]

Question 02

I.	Briefly explain the phases of database design.	[06 Marks]
II.	State four roles in the database environment.	[04 Marks]
III.	Draw an ER diagram for the following requirements:	[10 Marks]

A company database needs to store information about employees (identified by NIC, salary, position, phone, office); departments (identified by dno, with department name and annual budget); children of employees (with name, and age as attributes).

Employees work in departments; each department is managed by an employee; a child must be identified uniquely by name when the parent (who is an employee; assume that only parent works for the company) is known. We are not interested about a child once the parent leaves the company.

[Total 20 Marks]

Question 03

I.	State the Stages of the database system development lifecycle	[06 Marks]
II.	What is Normalization?	[02 Marks]
III.	States type of Anomalies that can be occurred due to un-normalization relation.	
		[03 Marks]

IV. This part is based on the 'Students' relation below.

Reg No	Name	ContactNo	Address	Gender	Age	GPA
1111	C.D. Perera	0372228222	Kurunegala	M	20	3.9
1112	C. Basnayake	0362255222	Awissawella	M	21	3.5
1114	N.S. Bandara	0812234567	Kandy	F	20	3.8
1115	K. Peris	0112876655	Colombo	M	21	3.0
1116	S. Menike	0253456654	Anuradhapura	F	21	2.6

Based on the 'Professionals' relation, calculate the answer for the below formula:

    a. DEGREE OF THE RELATION

    b. CARDINALITY OF THE RELATION   [4 Marks]

V. Explain what is meant by a foreign key. How do foreign keys of relations relate to candidate keys? Give examples to illustrate your answer.   [3 Marks]
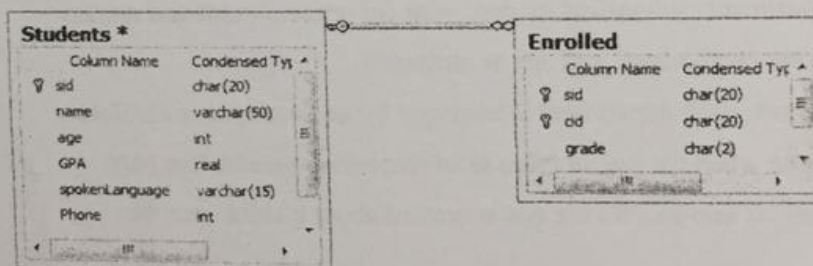
VI. What do you mean by meta data?   [2 Marks]

                                [Total 20 Marks]

Question 04

I. Write down the MS SQL statement to create the following two tables. Clearly indicate following constraints   [16 Marks]

Students *

Column Name	Condensed Typ
⚷ sid	char(20)
name	varchar(50)
age	int
GPA	real
spokenLanguage	varchar(15)
Phone	int

Enrolled

Column Name	Condensed Typ
⚷ sid	char(20)
⚷ cid	char(20)
grade	char(2)

Note : Student age should be between 18 and 40

Student GPA should be between 0 and 4

Default spoken language should be English language

II. Write down the MS SQL statement to add a column to store the phone number of the student.   [02 Marks]

III. Write down the MS SQL statement to display the student details where GPA is greater than 3.   [02 Marks]

Question 05

I.   What is the difference between authentication and authorization?   [04 Marks].

II. Define the term transaction.   [04 Marks]

III. Briefly describe the four basic properties of a transaction.   [08 Marks]

IV. Clearly describe the function of GRANT and REVOKE commands in SQL with suitable examples.   [04 marks]

Question 06

I.   Briefly describe the following terms

    a. Object Oriented Database   [02 Marks]

    b. Object Relational Database   {02 Marks]

II. What do you mean by well formed XML document?   [2 Marks]

III. What are the two ways that Document Type Definition (DTD) can be defined in XML?   [2 Marks]

IV. Based on the bellow Document tree, write down the DTD file.   [12 Marks]