SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology
First Year, First Semester Examination – 2017
HNDIT 1105- Database Management System / Introduction to Relational Database Management System

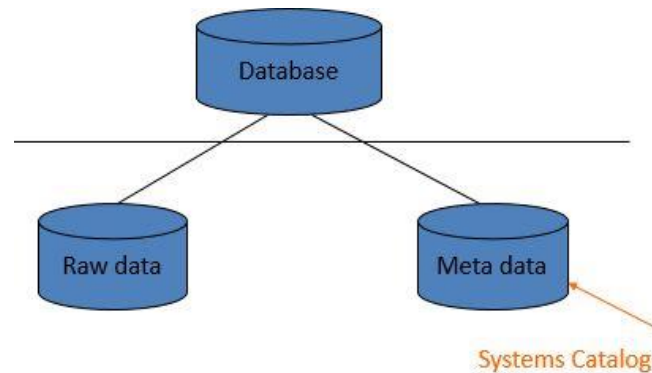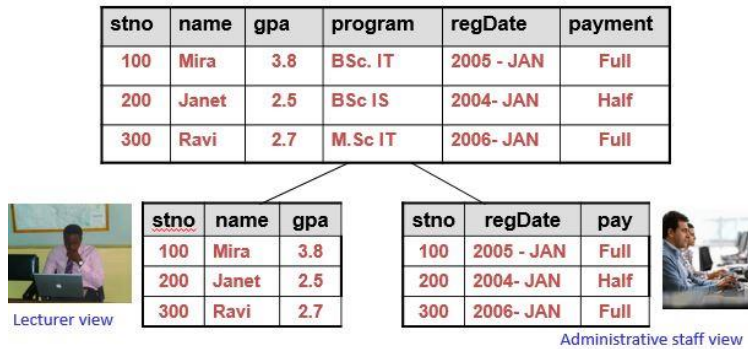|	
Instructions:	No. of questions :05
All Questions carry equal Marks	No. of pages : 06
Answer any four Questions	Time : Two hours

Q1)

  I.   Describe the Database Management System. (02 marks)

  II.   Give three disadvantages of file based processing. (03 marks)

  III.   Briefly explain role of the Database Administrators. (05 marks)

  IV.   Give five advantages of using DBMS. (05 marks)

  V.   The following two diagrams represent characteristics of DBMS approaches. Identify each characteristics and briefly explain them. (10 marks)

    a.

b.

Lecturer view   Administrative staff view

(Total 25 marks)

Q2)

   I.   Give two types of Database model.   (02 marks)

  II.   Describe the following terms related to Three Schema Architecture.   (03 marks)
- a. Internal schema
- b. Conceptual schema
- c. External schema

 III.   Briefly explain the following concepts.   (04 marks)
- a. Logical Data Independence
- b. Physical Data Independence

 IV.   Give two SQL commands for the following DBMS languages.   (06 marks)
- a. Data Definition Language
- b. Data Manipulation Language
- c. Data Control Language

  V.   The following tables explain the information about products. Identify the suitable data types in MS Access.   (10 marks)

Code A	Name B	Price C	Quantity D	Weight E	Brand F	Offers G	Expiredate H	Web I	Country J
P11	Cheese	Rs.350.00	20	475.00	Kraft	Yes	03/09/2019	www.kft.lk	Australia
P23	Milk	Rs.175.00	30	500.00	Anchor	No	24/12/2018	www.anc.lk	Sri lanka
P33	Biscuit	Rs.50.00	15	120.00	Munchee	Yes	20/05/2019	www.mn.lk	Sri lanka
P41	Jam	Rs.135.00	15	375.00	Kist	No	11/04/2019	www.Kst.lk	Sri lanka

(Total 25 marks)

Q3)

    I.   Describe the following database concepts.   (02 marks)
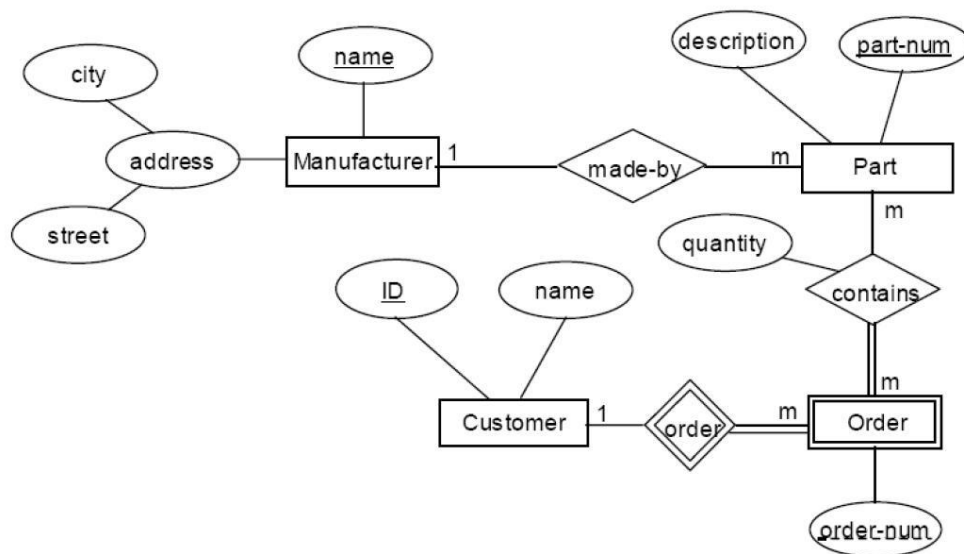- a. Domain of attribute
- b. Candidate key

    II.   Consider the following table of Employees and give example for following attributes.
    (04 marks)

EID	Ename	BirthDay	Age	Qualification
254562	RuwanDalpadadu	21/07/92	25	B.Sc M.Sc
112345	WajiraSenanyake	13/04/90	27	B.com
456872	AthulaWeerasinghe	08/10/87	30	IBSL AAT
23564	WasanaKumari	22/02/95	23	B.A

- a. Key attribute
- b. Composite attribute
- c. Derived attribute
- d. Multi valued attributes

    III.   Compare total participation and partial participation.   (04 marks)

    IV.   Map the following ER diagram into relational model.   (06 marks)

V.   Draw the ER diagram for the following description.   (09 marks)

There are many workers working under a project. Each worker is identified by name, worker id and by address. The project may include several departments under which many products are being produced. Several workers may belong to a single department and may participate in many projects. Each department is been identified by name, department id and by address. Similarly the projects have got its own project id and name. The products too got their own name and product id.The project may include several buy orders that may contain the product details and suppliers who deliver the buy orders. The buy orders are specified by their order, order date and delivery date. Same way, suppliers are specified by their name and supplier id.
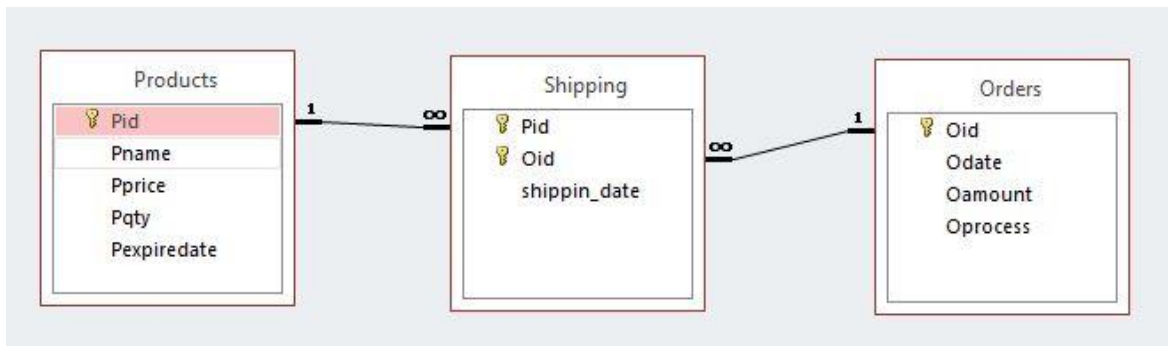
(Total 25 marks)

Q4).

I.   What is the purpose of foreign key constraint?   (02 marks)

II.   What is the difference between DROP and DELETE command?   (03 marks)

III.   Study the following relationship and structure of the tables.

Products			Shipping			Orders	
Fields	**Data type**		**Fields**	**Data types**		**Fields**	**Data type**
Pid	Char(5)		Pid	Char(5)		Oid	Char(5)
Pname	Varchar(25)		Oid	Char(5)		Odate	date
Pprice	real		Shipping_date	date		Oamount	real
Pqty	int					Oprocess	Varchar(25)
Pexpiredate	date						

a. Write SQL statement to create Products table.   (04 marks)
b. Write SQL statement to create Orders table.   (04 marks)
c. Write SQL statement to create Shipping table.   (04 marks)
d. Insert the following information to Products table.   (04 marks)

Pid	Pname	Price	Pqty	Pexpiredate
P1234	Fresh milk	230.50	12	24/03/2018
P2245	Canned Fish	330.00	15	08/06/2019

e. Update price of the canned Fish into 370.00   (02 marks)
f. Add a new column category (varchar (25) to the Products table.   (02 marks)

(Total 25 marks)

Q5).

I.   Briefly explain the following Database security terms.   (02 marks)
       a. Grant
       b. Revoke
II. Consider the following tables Students and Courses. Write SQL statements to perform the following.

Students				
Sno	Sname	SGPA	Scity	Cno
S1	Saman	2.60	Kegalle	C1
S2	Kamal	2.45	Kandy	C2
S3	Joe	3.20	Galle	C3
S4	Ruwan	4.00	Kandy	C1
S5	Asela	3.50	Jaffna	C4
S6	Asanka	2.88	Galle	C2
S7	Wasana	2.75	Colombo	C3
S8	Dilini	3.35	Kandy	C1
S9	Aruna	2.76	Galle	C4
S10	Gayani	3.00	Jaffna	C4

Courses		
Cno	Cname	Cduration(years)
C1	HNDA	4
C2	HNDIT	2
C3	HNDM	3
C4	HNDE	2

a. Print all the student's name and GPA. (03 marks)
b. Print name of student with SGPA>3.00. (03 marks)
c. Display Cno and number of students from each course. (03 marks)
d. Display all the information Sname, SGPA and Cname. (03 marks)
e. Sort the Student table with ascending order by SGPA. (03 marks)

III. Briefly explain the following terms. (04 marks)
    a. 1NF
    b. 2NF

IV. Convert the following table into 1NF and 2NF. (04 marks)

Student	Age	Subject
Adam	15	Biology,Maths
Alex	14	Maths
Stuart	17	Maths

(Total 25 marks)