The Open University of Sri Lanka
Faculty of Engineering Technology
Department of Electrical and Computer Engineering

Study Programme	: Bachelor of Software Engineering Honours
Name of the Examination	: Final Examination
Course Code and Title	**: EEI3266/EEX3266/EEI3566-Information systems and Data management**
Academic Year	: 2020/21
Date	: 11th January 2021
Time	: 0930-1230hrs

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper consists of **Seven (7)** questions in **Five (5)** pages.
3. Answer any **FIVE (05) questions ONLY**
4. Answer should be written in answer book provided .Answer for each question should commence from a new page.
6. This is a Closed Book Test **(CBT).**
7. Answers should be in clear hand writing.
8. Do not use red colour pen

Answer any **FIVE (05) Questions**

Q1)

a) Compare and contrast Data and Information **(4 Marks)**

b) What is an Information System? **(4 Marks)**

c) Describe three(03) components of an Information System. **(6 Marks)**

d) Briefly explain role of Management Information Systems (MIS). **(6 Marks)**

Q2)

a) Briefly describe the following components / concepts of ER modelling.

i) Entity

ii) Attributes

iii) Relationship

iv) Cardinality **(4 X 2 Marks)**

b) Draw an ER diagram to show the following relationships

i) One Departement may have Many employees.

ii) An Employee must be allocated to a Department. **(6 Marks)**

c) Briefly explain the purpose of using Normalization in database design. **(6 Marks)**

Q3)

Create an ER diagram for the following scenario. clearly state any assumptions you make that influence your diagram.

'*Mega Computers(Pvt) Ltd*' is a computer consultancy firm. They are planning to have a new computer system to store basic information about their employees. Such as employee name, DoB, contact details, etc. Also the new system should be able to keep track of the role of each employee

such as Programmer, Hardware operator, Software Engineer etc. Employees can perform multiple roles, and each role has an hourly pay.

'Mega Computers(Pvt) Ltd' need to store their customer details. A customer can have multiple contracts with mega computers, but each contract is only associated with only one customer. Each contract has a name, a description, a starting date, and a job type. One employee is assigned to handle each contract, and one employee may handle multiple contracts. **(20 Marks)**

Q4)

Normalize the following invoice, showing how you progress from 1NF through 2NF to a set of 3NF relations. At each normalized form, show the primary key and any foreign keys of each relation. **(20 Marks)**

INVOICE

Customer No : 11123 **Invoice No** : 0001232

Customer Name : L M Perera **Invoice Date** : 24/11/2021

Customer Address : No 234/A, Bodhi Mawatha, Nawala

Item Code	Description	Qty	Unit Cost	Subtotal
IT23787	Fresh Milk	2	300.00	600.00
IT08326	Chocolate	5	150.00	750.00
IT87564	Tomato sauce	1	450.00	450.00
			Total	1,800.00

Q5)

a) Explain the following terms with suitable examples.

i) Data Manipulation Language (DML)

ii) Column Alias

iii) Primary Key

iv) Foreign Key **(4 X 2 Marks)**

b) What are the uses of **views** in SQL? **(6 Marks)**

c) Explain the use of **Joins** in SQL with a suitable example. **(6 Marks)**

Q6)

Consider the following tables

Toy (ToyID, ToyName, Cost, Color)

Shop (ShopID, ShopName, Address)

Seller (ShopID, ToyID, Qty, SalePrice)

Express the following queries in SQL

a) Add a new Toy to the **Toy** table. The new toy is a Teddy Bear with a ToyID 2212 , Color Brown and Cost 500/-. **(5 Marks)**

b) Modify the newly added 'Teddy Bear' record and change the Cost of it to be 550/-. **(5 Marks)**

c) ToyID 2298 had a factory defect and can't be sold anymore. Remove these toy details from the database. **(5 Marks)**

d) The SalePrice for all items are incorrect. Update all SalePrice by adding additional LKR100/- **(5 Marks)**

Q7)

Consider the following tables

Item (ItemID, Description, UnitPrice)

Basket (BasketID, SalePrice, NoofBaskets)

Content (BasketID, ItemID, Qty)

Express the following queries in SQL

a) Display all the baskets, items and their Unit Prices. Sort the result by unit price. **(4 Marks)**

b) What is the average sale price of a basket ? **(4 Marks)**

c) Find the number of different items in the basketID 00118. **(6 Marks)**

d) Find the total unit price of a BasketID 00112. **(6 Marks)**

~ End of the Paper ~