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



Study Programme : **Diploma in Information Systems and Technology**
Name of the Examination : Final Examination
Course Code and Title : EEI3566 / ECI3266 Information Systems and Data Management
Academic Year : 2017/18
Date : 29th January 2019
Time : 0930-1230hrs
Duration : 3 hours

General Instructions

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

- a) Compare and contrast Data & Information.
Note: Use table format to present the answer
- b) A survey has been conducted to gather information about time spent per day by a DIST student for the self-study to get ready for the final examination 2017/18 academic year. The two courses EEI3566 and EEM3266 were considered with 10 eligible students for the both courses. Student is identified with St#. Time is presented in hours. Table 1 illustrates the survey data.

Table 1: Time spent for self-study per day during the preparation for Final exams (Dec- Jan 2018)

Course	St.#1	St.#2	St.#3	St.#4	St.#5	St.#6	St.#7	St.#8	St.#9	St.#10
EEI3566	1.5	1	2	2	1	0.5	1.5	3	2	2.5
EEM3266	2	0.5	1	2	1	1.5	1.5	3	2.5	2.5

- a) Write five (05) useful information derived from the Table1. **(4 Marks)**
- b) Present three (03) of the selected information in a graphical illustration using charts or graphs. **(6 Marks)**
- c) As a student of OUSL and with this available data of self-studies for preparation for the final exams, write a small summary for a junior batch to prepare for their final exams in 2019. **(10 Marks)**
Note: Summary should not exceed more than 250 words.

QUESTION 2

- a) Briefly explain ANY THREE of the following:
- I. Ecommerce
 - II. Office Automation
 - III. Open Source Software
 - IV. Expert System
 - V. Customer Relationship Management System (CRM)
- (6 Marks)**
- b) Describe three types of Information Systems and how they could support three (03) of the major functional areas in a business in telecommunication sector. **(6 Marks)**
- c) Briefly describe four major threats against present Information Systems. **(8 Marks)**

QUESTION 3

- a) Normalization is used for mainly two purposes. Briefly explain. (6 Marks)
- b) List the basic functions of SQL and its uses for DBMS. (6 Marks)
- c) Describe the major advantages of DBMS. (8 Marks)

QUESTION 4

- a) Briefly explain the following terms:
- I) Relation
 - II) Attribute
 - III) Domain
 - IV) Tuple
- (8 Marks)
- b) A data sublanguage mainly has two parts. Briefly explain outlining role of each Part. (6 Marks)
- c) Describe the major advantages of RDBMS. (6 Marks)

QUESTION 5

A database is used in an order-entry system that needs to contain information about customers, items, and orders. The following information is to be included.

- For each customer: Customer number (unique), Valid "ship to" addresses (several per customer), Balance, Credit limit, Discount
- For each order, heading information: customer number, "ship-to" address, date of order. Detail lines (several per order), each giving item number, quantity ordered
- For each item: Item number (unique), Warehouses Quantity on hand at each warehouse, Item description

Design a database for the data provided. Clearly state any assumptions that seem necessary.

(20 Marks)

QUESTION 6

Convert the following assumptions to an ER Model.

- A college has many departments
 - Each department can offer any number of courses
 - Many instructors can work in the department
 - An instructor can work only in one department
 - For each department, there is a Head
 - An instructor can be a Head of only one department
 - Each instructor can take any number of courses
 - A course can be conducted by only one instructor
 - A student can enroll for any number of courses
 - Each course can have any number of students
- a) Identify and list all the entities. (4 Marks)
- b) Find the relationships between the entities and write the cardinality of each relationship. (4 Marks)
- c) Identify the keys and attributes for each entity. (4 Marks)
- d) Draw an ER diagram. (8 Marks)

QUESTION 7

'Real Life' kids social club is very popular in the city. The staff maintains a database to keep records of student activities to provide 'Kids Activity Participation Report' for the parent/guardian. The following figure 1 illustrates the sample report format.

Un-Normalized Form (UNF) is given for the database.

UNF: Child [RealLIFE_id, Child_name, Membership_type, Child_age, Parent/Guardian, (Activity date/s, Programme_no, Activity name)]

Real Life Kids Activity Participation Report

REALLIFE ID	Child NAME	Membership TYPE	Child AGE	Parent/Guardian	Activity DATE	Programmes participated
122	Saneru	Kid-M	10	Mrs. Malini	JAN 13/2018	01 - Handcraft workshop-1
					MAR 27/2018	10 - Kids party
					APR 07/2018	05 - Summer school
823	Ryan	Teen-M	15	Mr.Perera	JAN 21/2018	08 - Forest camp
					MAR 10/2018	05 - Teen gathering
234	Luthara	Kid-F	12	Mrs. Kularathne	JAN 13/2018	01 - Handcraft workshop -1
					JAN 22/2018	01 - Handcraft workshop -2
342	Manujith	Kid-M	12	Mrs. Chandani	APR 07/2018	05 - Summer School
					APR 30/2018	01 - Handcraft workshop -3
122	Saneru	Kid-M	10	Mrs. Sandyani	JAN 13/2018	01 - Handcraft workshop-1

Figure 1: Kids Activity Participation Report

- a) Normalize the database into 2NF. State assumptions if any. (6 Marks)
- b) Write SQL commands to create tables in 2NF. (4 Marks)
- c) Add at least 3 records to each table in 2NF using SQL commands. (5 Marks)
- d) Edit, Delete and Update at least one record in the Child table using SQL commands. (5 Marks)