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

Study Programme	: Bachelor of Software Engineering Honours
Name of the Examination	: Final Examination
Course Code and Title	**: EEI3266 Information Systems and Data Management**
Academic Year	: 2022/2023
Date	: 27th May 2023
Time	: 09:30-12:30hrs
Duration	: **3 hours**

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper contains four (04) questions. **ALL FOUR (04) questions are compulsory.**
3. Answers should be in clear handwriting.

Q1. (25 marks)

i. Define the term ERP and explain one of the main features of an ERP system. **(2 marks)**

ii. List the FIVE (5) components of an Information System. **(5 marks)**

iii. What are the TWO (2) main classifications of Information Systems? Provide THREE (3) examples under each classification. **(8 marks)**

iv. (a). Define the SIX (6) stages of the database development life cycle.
(b). Briefly explain-the ACID properties of a transaction checked at database testing.
(10 marks)

Q2. (25 marks)

It is required to develop a database to record information about reality shows broadcast on a TV channel. Consider the related scenario given below on reality shows to answer the questions.

For each reality show, its unique name, genre, basic info and participants' names should be recorded. Any reality show has at least two or more participants. A producer has a producer name, company name, address and company country. A show is produced by exactly one producer and one producer produces exactly one show. The existence of the producer depends on the reality show and if the reality show is no longer being broadcasted, it is not necessary to keep the producer information in the database. A single television channel may broadcast multiple shows. For each television channel there is a unique TV name, start year and the head office address. The number of years the television channel was operating is also recorded from the start date. Each show is broadcasted by exactly one television channel. A user may rate multiple shows, and a show may be rated by multiple users. Each rating has a score of 0 to 10 done by the user per each reality show. For each user, his/her username (which is unique for each user) is being recorded along with the password and age derived from the date of birth. One or more contact details of the user also need to be saved in the database such as email, phone number or any other.

i. Draw a suitable Entity Relationship diagram (ERD) for the above scenario using appropriate attribute types, entity types and relationship types.

ii. Indicate the cardinality and participation for each relationship.

iii. State any assumptions you make.

Q3. (25 marks)

i. Define THREE (3) reasons why Normalization is necessary for relations in a database. **(3 marks)**

ii. Define and describe the THREE (3) types of dependencies in relational databases. **(6 marks)**

iii. Describe 3 of the anomalies present in the table given below. **(6 marks)**

TempStaffAllocation

Staff No	**Branch No**	**Branch Address**	**BranchTel Nos**	**StaffName**	**Position**	**Hoursper Week**	**Wage** (depend on no. of hours worked per week)
S345	B002	18A Nawala	0112235455, 0112235456	T. Perera	Assistant	16	16000
S345	B004	03 Dehiwala	0112658901, 0112658902	T. Perera	Assistant	8	8000
S458	B002	18A Nawala	0112235455, 0112235456	S.A. Kumara	Assistant	12	12000
S458	B004	03 Dehiwala	0112658901, 0112658902	S.A. Kumara	Assistant	10	10000
S234	B004	03 Dehiwala	0112658901, 0112658902	M. Udaya	Trainee	18	18000

iv. Normalize the table given in part (iii) to 1NF, 2NF and 3NF separately. Primary key attribute(s) should be underlined. Indicating only the table headings/attributes is sufficient. **(10 marks)**

Q4. (25 marks)

Answer the questions given below based on the following table named 'Customer' by writing the appropriate SQL queries.

Customer_id	Cust_name	City	Grade	Salesman_id
3002	Tehan Perera	Colombo	100	5001
3007	Roshan Bandara	Colombo	200	5001
3005	Malki de Silva	Kandy	200	5002
3008	Tharu Lakshan	Matara	300	5002
3004	Roshel Silva	Kurunegala	300	5006

i. Write a SQL query to create the above table. Use suitable data types for the given attributes. Include the integrity constraints as necessary and use referential integrity constraint to link the given table with another table called 'Salesman' in the database. **(10 marks)**

ii. Write SQL query to insert the data rows into the created table using the given values. **(4 marks)**

iii. Write a SQL query to display the minimum grade obtained by a customer with the Customer id, name and minimum grade displayed with the column name as 'MinGrade'. **(2 marks)**

iv. Write a SQL query to display the Customer name, city and grade of those who purchased from salesman having the salesman id '5002' in the descending order of the grade.**(3 marks)**

v. Write a SQL query to delete the data pertaining to customers from city of 'Kurunegala'. **(2 marks)**

vi. Write a SQL query to modify the grade to 300 for the customer 'Roshan Bandara'. **(2 marks)**

vii. Write a SQL query to modify the Customer table including the customer 'Date of birth' column. **(2 marks)**

-END-