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	**: EEX4347 Software Engineering Concepts**
Academic Year	**: 2020/21**
Date	**: 4th January 2022**
Time	: 0930-1230hrs
Duration	: **3 hours**

General Instructions

1. Read all instructions carefully before answering the questions.
2. This question paper contains **Part A** and Part **B.** Answers should be written in answer book provided. Answer for each question should commence from a new page.
3. This question paper consists of **Five (5)** questions in **Four (4)** pages.
4. Answer only **One (1)** question from **Part A.** All questions carry equal marks.
5. Answer all the **Three (3)** questions from **Part B.** All questions carry equal marks.
6. This is a Closed Book Test **(CBT).**
7. Answers should be in clear handwriting.
8. Do not use red colour pen.

PART – A

Answer any 1 question from part A.

(You can select Question 1 or Question 2. DO NOT need to provide answers to both Q1 and Q2 in from part A)

(25Marks)

Q1. Writing Good Requirements is an essential part of the Software Engineering Life Cycle.

a. Identify user requirements for Buying and Selling business?

(5 Marks)

b. What is Requirement Elicitation? Briefly explain three (3) Requirement Elicitation techniques.?

(5 Marks)

c. Why Requirement Validation is important? Name three (3) requirement validation techniques?

(5 Marks)

d. Name five (5) common problems when understanding user requirements?

(5 Marks)

e. Briefly illustrate and explain how to solve the mentioned problems in part (d)?

(5 Marks)

Q2. Project management is the process of leading the work of a team to achieve all project goals within the given constraints.

a. Explain why projects fail?

(5 Marks)

b. Name three (3) project management techniques and briefly explain one technique with an illustration?

(5 Marks)

c. Briefly explain three (3) techniques used in software maintenance?

(5 Marks)

d. What are the tests that should be applied to a simple loop where n is the maximum number of allowable passes through the loop? (Consider White box testing and state any assumptions made)

(4 Marks)

e. Design test cases for a login page with two text boxes and one button?

(6 Marks)

PART – B

Answer all the questions in Part B

(75Marks)

Q3. An online order processing system

A merchandiser maintains a catalog of products online. Customers can browse throw the catalog and place orders for the items. A website needs customers to be registered before placing any orders. Submitted orders are processed daily, which involves updating the merchandiser's items inventory and raising the invoices for the customers. Once the customers make the payments, shipment details (delivery notes) are generated. Successful delivery of goods updates the shipment details and completes the transaction.

In case if ordered items (Customer orders) are not available in the inventory, merchandiser raises a back order (Supplier order) for its registered set of suppliers to get down the unavailable items to merchandizer warehouse. Payments are settled for the registered suppliers on a monthly basis for the goods they supplied during the month. Once the goods are received from the suppliers, customer order processing proceeds as explained before.

a. Draw a Use Case diagram to accommodate all data requirements for the above scenario. Document any assumptions you make.

(10 Marks)

b. Draw an ER diagram to accommodate all data requirements for the above scenario. Document any assumptions you make. You will assume sensible attributes and entities as necessary.

(15 Marks)

Q4. Consider the given scenario in Question 3 and provide the answers to the following,

a. Map your database design in Question 3 to the relational model.

(10 Marks)

b. Validate your relational database resulted in part (a) above using normalization up to 3rd normal form. Clearly indicate steps and reasons for your conclusions.

(15 Marks)

Q5. Write down SQL statements to carry out the following tasks for the database in Question 4(b)

a. List down all the details of all items in the catalog.

(2 Marks)

b. List down items that have been ordered during the last three months.

(2 Marks)

c. List down the details of the items that have been ordered during the last three months

(2 Marks)

d. List down the items that have not been ordered during the last three months

(2 Marks)

e. List down the item details of customer orders placed today.

(2 Marks)

f. List down all items in the catalog but not available in the stores.

(2 Marks)

g. List all items in the pending (not processed yet) customer orders but not available in the stores.

(2 Marks)

h. Update the Customer Order 'CO0012' to increase the item quantity of 'IT004' to 16.

(2 Marks)

i. Write down the SQLs required to enter a new customer order (first, insert the header record and then insert the item detail records).

(5 Marks)

j. Write SQL to delete the Customer order 'CO0023'.

(4 Marks)