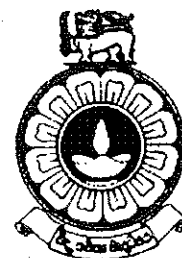


**The Open University of Sri Lanka**  
**Faculty of Natural Sciences**  
**B.Sc/ B. Ed Degree Programme**



<b>Department</b>	: Computer Science
<b>Level</b>	: Level 04
<b>Name of the Examination</b>	: Final Examination
<b>Course Title and - Code</b>	: System Analysis & Software Engineering – CSU4302
<b>Academic Year</b>	: 2020/2021
<b>Date</b>	: 16.12.2021
<b>Time</b>	: 09.30 a.m. – 11.30 a.m.
<b>Duration</b>	: 02 Hours

**General Instructions**

1. Read all instructions carefully before answering the questions.
  2. This question paper consists of **SIX (06)** questions in **03** pages.
  3. Answer **FOUR (04)** questions only. **Question 01** is **compulsory**. Answer any **03** out of the remaining. All questions carry equal marks.
  4. Answer for each question should commence from a new page.
  5. Draw fully labeled diagrams, where necessary.
  6. Involvement in any activity that is considered as an exam offense will lead to punishment.
  7. Use blue or black ink to answer the questions.
  8. Clearly state your index number in your answer script.
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Q1)

- i. Briefly describe what each of the following types of UML diagrams are used for. Also, list the notations used in each of the diagram.
  - a. Use case diagram
  - b. Class diagram
  - c. Sequence diagram
- ii. Draw a **use case diagram** and a **class diagram** for the following scenario.

An urban council library has books, videos and journals that are lent to its registered users. All these library materials have their own identification number and a title. In addition, books have one or more authors, videos have one producer and one or more actors, and journals have one or more publishers.

Only the residents of this urban council can get the membership in the library and the age of the member should be more than 6 years old. People who are interested in registering with the urban council library need to fill the application form and submit it to the librarian. The librarian validates the minimum requirements of the applicant and informs the applicant whether he/she is eligible for registration. If the applicant is eligible, he/she needs to pay a registration fee of Rs.1500/=. The payment can be done by cash or card.

The library maintains the following information of their registered users.

- Registration Number
- Name
- Date of Birth
- Address
- Phone Number

For the members whose age is less than 16 years old, the library maintains the guardian's information as well. Each member can borrow any 3 library items at a given time.

Furthermore, the library maintains one or more copies of each library item (books, journals, and videos). A copy of library items can be reference-only material or regular material. Reference-only materials are lent for 3 hours and cannot be taken out from the library. The regular materials are lent out for 2 weeks. If the member is unable to return the items within 2 weeks, he/she needs to pay Rs.50/= per week per item as a fine.

Every item that is borrowed by a registered user is recorded in the library system using the following information.

- User Registration Number
- Issue Date and time
- Return date and time.

Q2)

- i. What is the difference between user requirements and system requirements?
- ii. What are the activities used in requirement elicitation and analysis? Briefly describe.
- iii. Briefly explain the different techniques that are used in requirements validation.

Q3)

- i. "Rapid Application Development (RAD) is an alternative to the traditional systems development life cycle." Comment on this statement.
- ii. Briefly explain the process of Rapid Application Development.
- iii. List two advantages and two disadvantages of using Rapid Application Development (RAD).

Q4)

- i. List basic activities that are common to all the software processes.
- ii. Briefly describe the importance of software process standardization.
- iii. Waterfall Model is a plan-driven software process model with distinct phases of specification and development.
  - a. Briefly explain all the phases of the waterfall model.
  - b. What are the drawbacks of the waterfall model?

Q5) Software Quality Management plays a major role in the software development life cycle.

- i. Explain the difference between Software Quality Assurance and Software Quality Control.
- ii. Briefly describe the structure/ steps included in Software Quality Planning.
- iii. Discuss the importance of using quality assurance standards.

Q6)

- i.
  - a. Explain the importance of software project management and the responsibilities of software managers.
  - b. What are the various activities covered by software project management?
- ii.
  - a. List four (04) types of project planning and briefly describe them.
  - b. Explain what risk management is and its process.

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