

THE OPEN UNIVERSITY OF SRI LANKA
B.SC(IT) DEGREE PROGRAMME
LEVEL 03
COU3202 – System Analysis and Designing
Final Examination: 2024/2025
Duration: Two hours only (02 hours)



Date: 20.06.2025

Time: 9.30 am – 11.30 am

INSTRUCTIONS TO CANDIDATES

- Carefully read all the instructions given below.
- This paper contains **Six (06)** questions in **four (04)** pages.
- You must answer question 01 and select any **three (03)** questions out of question 2 – 6.
- All the questions carry equal marks.
- Paper duration is **two hours**.
- Each main question must begin on a new page.
- Use **blue or black ink pen** to write answers.

Question one is mandatory to answer.

(Q1) (25 marks)

- a) Describe what is known as “*Object Oriented Modelling*”. [2 marks]
- b) What are the two types of UML diagrams? [2 marks]

Read the below scenario and answer the below questions.

A small public library allows members to borrow books. Each member has a unique ID and can borrow up to five books at a time. The library has a catalog of books, each with a title, author, ISBN, and availability status. When a member wants to borrow a book, the librarian checks if the book is available and whether the member is eligible. If both conditions are met, the book is issued, and the due date is set to two weeks from the borrowing date. Librarians can also add new books to the system or update book details.

- c) Identify the actors in the given scenario. [2 marks]
- d) Draw the class structure of the class “*Catalog*” based on the given description. [5 marks]
- e) Draw an activity diagram to explain the logic process “*Borrowing a book*” based on the given scenario above. [6 marks]
- f) Draw the sequence diagram for “*issuing a book*” based on the given scenario above. [8 marks]

Answer any three questions from question 02 – 06.

(Q2) (25 marks)

- a) Explain the term “*Software Development Life Cycle*”. [2 marks]
- b) List down all the phases of the SDLC. [3 marks]
- c) Explain how to perform “*input designing*” for a point-of-sale (POS) system. [8 marks]
- d) “*The Software Development Life Cycle (SDLC) is considered an inseparable part of successful software development*” Do you agree with this statement or not? Explain your answer. [12 marks]

(Q3)

(25 marks)

- a) What is known as a “*Software Process Model*”? [2 marks]
- b) List down *three* testing phases associated with the “*V model*”. [3 marks]
- c) “*The Waterfall Model is simple but rigid.*” Do you agree with this statement or not?
Explain your answer. [8 marks]
- d) As an undergraduate student you are assigned to develop a *Railway Management System* for Sri Lankan government. What would be the software process model you choose and justify your selection. [12 marks]

(Q4)

(25 marks)

- a) State what is a “*Functional Requirement*”. [2 marks]
- b) List down *three* requirement gathering techniques. [3 marks]
- c) “*Non-functional requirements are just important as much as functional requirements*”
Explain this statement with reference to e-commerce platform such as *Aliexpress, Temu* etc. [8 marks]
- d) What is the *importance of requirement gathering and analyzing* for the *software development*? [12 marks]

(Q5)

(25 marks)

- a) What is known as a “*software architecture*”? [2 marks]
- b) List down *three* symbols of Data Flow Diagrams (DFD) [3 marks]
- c) Explain the architecture principle “*Build to Change, not to Last*” [8 marks]
- d) “*Communication skill is one of interpersonal skill a system analyst should have*”.
Explain this statement. [12 marks]

(Q6)

(25 marks)

- a) Explain the term “*software maintenance*”. [2 marks]
- b) State what are the four maintenance types [3 marks]
- c) Users of a newly introduced chatting app called “*WeChat*” have requested a *dark mode feature* to improve their user experience. Which type of software maintenance does this request fall under? Justify your selection. [8 marks]
- d) Why does “*software require maintenance even if software products are bug-free and functional at delivery*”? [12 marks]

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