SUNWAY UNIVERSITY

FACULTY OF ENGINEERING AND TECHNOLOGY

FINAL EXAMINATION FOR THE BACHELOR OF SOFTWARE ENGINEERING (HONOURS)

ACADEMIC SESSION : APRIL 2025 SEMESTER

CSC3209: SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

EXAMINATION : AUGUST 2025

TIME ALLOWED : 2 HOURS AND 10 MINUTES READING TIME

INSTRUCTIONS TO CANDIDATES

This exam contains FIVE questions.

Answer **ALL** questions.

All answers must be written in the answer booklets provided using blue or black INK.

IMPORTANT NOTES TO CANDIDATES

Materials Allowed

Standard Items: Pen, Pencil, Eraser or Correction Fluid, Ruler
Special Items : Non-Programmable Calculators, Computer, Tablet, Notes (Compiled in one Folder)

It is your responsibility to ensure that you do **NOT** have in your possession any unauthorized notes or any other means that would improperly help you in your work. If you have any unauthorized materials with you, hand it to the invigilator BEFORE reading any further.

DO NOT REMOVE THIS QUESTION PAPER FROM THE EXAMINATION HALL

[This paper contains **FIVE** questions printed on **THREE** pages, including cover page]

Question 1 **(Total: 17 marks)**

a) What is the primary role of the process photosynthesis? (2 marks)

The primary role of photosynthesis is converting the light from the sun to energy, it is essential for the plant's growth.

b) Write down the two main reactants that a plant needs for photosynthesis to occur. (2 marks)

Carbon dioxide, water

c) Understanding Web 3.0

i) Briefly explain the core concept of Web 3.0 and name the key foundational technology that enables its vision of decentralization. (3 marks)

Web 3.0 allow the web to become more decentralized, ideally to create a more intelligent and personalized web experience to the user.

ii) Explain how Web 3.0 is fundamentally different from the current internet (Web 2.0) in terms of data ownership and control. (3 Marks)

Web 2.0 is working in a centralized platform like social media. While as Web 3.0, it is aimed for a decentralized internet, allowing the user to have more control and ownership of their data.

Question 2 **(Total: 13 marks)**

This question assesses your understanding of SDLC and Maintenance

a) Identify and briefly describe the **first three sequential phases** of the classic Software Development Life Cycle (SDLC) model (e.g., Waterfall). (8 marks)

Planning phase, it is the most critical stage of the Software development Life Cycle that determines the project's gools and scope. Secondly, design phase, it defines the overall software architectures. Lastly, implementation phase, this phase translate the planned document into actual working code by starting the developing progress.

b) Explain why the **Maintenance** phase is considered a critical and often the **longest** phase in the overall life cycle of a successful software product.

(2 Marks)

It is because when deploying a system, many unexpected bugs or errow will arise. Therefore, to ensure the system provides a seamless user experience to the user, this maintenance phase is crucial, as it eliminates all the unwanted error.