United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Final Exam Trimester: Summer 2023 Marks:40 Time:2 Hours

Code: CSE 3411 Course Title: System Analysis & Design

"Any examinee found adopting unfair means will be expelled from the trimester / program as per UIU disciplinary rules."

Answer **ALL** of the following questions:

QUESTION 1 [CO3] 18

Consider the following scenario for **UniMart Online Shopping System**:

In response to evolving consumer trends and technological progress, the renowned retail giant "UniMart" is embarking on a visionary project—creating the "UniMart Online Shopping System." This digital platform aims to revolutionize the retail experience by seamlessly integrating convenience, an expansive product selection, and user-centric features. With a rich legacy spanning decades, UniMart is known for its diverse product offerings in electronics, fashion, home goods, and more. The core objectives of the platform include a comprehensive product catalog that encompasses the entirety of UniMart's offerings, a personalized shopping experience driven by machine learning algorithms, and a streamlined checkout process with real-time order tracking. The system addresses the needs of three user roles: guest users who can explore without an account, registered users with personalized profiles and recommendations, and administrators overseeing product management and order processing. Users explore the product catalog, add items to their carts, and proceed to the streamlined "Checkout" process, where they review items, select shipping options, and make secure payments, ensuring real-time order tracking and encrypted payment processing. Once an order is successfully placed, the system initiates a comprehensive lifecycle process, from order confirmation and processing through various stages such as packaging, shipping, and final delivery.

a) Design a **Use Case Diagram** illustrating how a user interacts with the system to place an order. [4]

b) Draw the **Class Diagram** and **CRC card** for "**UniMart Online Shopping System"** by identifying the main classes and their relationships. [3+3]

c) Draw **Sequence Diagram** for the interactions between a user and the system when placing an order described in the above scenario. [4]

d) Create a **State Diagram** that represents the lifecycle of an order. [4]

QUESTION 2 [CO4] 4

a) Imagine you and your team are considering a new project in the field of renewable energy. The project involves setting up a solar power farm. The initial investment required for the project is $15,000, which will cover the costs of solar panels. You spent $2000 for equipment, and installation in the 2nd year. In the 4th year you had to bear the expenses for the wages of employees $3000. The projected revenues are as follows: Year 1: $30,000, Year 2: $45,000, Year 3: $60,000, Year 4: $70,000, and Year 5: $80,000. Consider the rate of interest is 10%.
Determine whether the project is financially sustainable for your team or not using the following two methods: [4]
   i. Cash Flow
   ii. Net Present Value

QUESTION 3 [CO3] 7

a) Provide an example of how inconsistent design elements can confuse users. [3]

b) Design the **checkout process UI**, showing steps like entering shipping information and payment details. Mention the UI design principles that you have followed here. [4]

QUESTION 4 [CO3] 11

a) "A good SRS must follow **3C properties** - Completeness, Correctness, and Consistency – define and justify. [3]

b) An SRS document is a blueprint document for all the stakeholders participating in the system development life cycle – briefly justify. [3]

c) Write down an SRS document and present it as a group having the following parts on your software project work: Introduction, System Study, Analysis, Feature list fixation steps, Functional and Non-functional requirements, System design (UML diagrams), UI design through Figma software, financial feasibility etc. **(no need to answer in examination, it has already been evaluated in classroom activities**). [5]