# United International University (UIU)

**Dept. of Computer Science & Engineering (CSE)**

Final Exam Trimester: Spring 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:

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**QUESTION 1** **[ CO3 ]** **20**

Consider the following scenario for an **Blockchain based Voting System** application:

A group of developers is working on building a decentralized voting system using blockchain technology. The process begins with the developers designing and implementing the blockchain network, which consists of nodes spread across different locations. These nodes work together to validate and record each voting transaction on the blockchain. Once the blockchain network is set up, the developers focus on creating the smart contract responsible for managing the voting process. The smart contract includes functions for registering voters, casting votes, and tallying the results. It ensures that each vote is recorded securely and cannot be tampered with. To participate in the voting, eligible voters register on the blockchain by providing their identification details. The smart contract verifies the eligibility of each registered voter and stores their information securely. During the voting phase, registered voters cast their votes by invoking the appropriate function on the smart contract. The smart contract ensures that each vote is anonymous and recorded on the blockchain. Once a vote is cast, it cannot be modified or deleted. However, after casting, they have a small-time window within which they can change their votes before final confirmation. As the voting period ends, the smart contract initiates the process of tallying the votes. It counts the votes and calculates the final results based on predefined rules. The results are stored on the blockchain and made available for public viewing.

a) Draw the USE CASE Diagram (having "include" or "extend" relationship, if needed). [4]

b) Draw the **Class Diagram** and **CRC card** for the above scenario. Mention the justification/rules of considering/identifying the classes. [3+2+2]

c) Draw Sequence Diagram for the above scenario. [5]

d) Draw the State Diagram for the above scenario. [4]

## QUESTION 2 [ CO4] 4

a) Suppose you, along with your friends, found a novel idea to develop a software system to consider as a business venture. To implement the idea, your team supposed to invest \$7500, \$5000, \$3000 at present, in 2nd year and in 3rd year respectively. In return as a revenue your team may receive \$5000, \$7500 and \$10000 in 3rd, 4th and 5th year respectively. Consider the rate of interest is 10%.
Determine whether the project in financially sustainable for your team or not in terms of following two methods: [4]
   i. Cash Flow
   ii. Net Present Value

## QUESTION 3 [CO3] 8

a) Mention some best practices/guidelines of UI design. [3]

b) Depict the proposed UI design (concept sketch) of **Home_Page** for the above-mentioned scenario and also mention the UI design principles those you have followed here. [5]

## QUESTION 4 [CO3] 8

a) In a software development project different stakeholders' activities mostly dependent on the SRS document – justify it. [3]

b) 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 exam, it has already been evaluated in class room activities**). [5]