ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION   **SUMMER SEMESTER, 2021-2022**
DURATION: 1 HOUR 30 MINUTES   **FULL MARKS: 75**

SWE 4401: Software Requirement and Specifications
Programmable calculators are not allowed. Do not write anything on the question paper.
Answer **all 3 (three)** questions. Figures in the right margin indicate full marks of questions whereas corresponding CO and PO are written within parentheses.

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1. An auction house named AntiqueAuc is looking to modernize their bidding process by implementing an auctioning software called AucLive. They have received investments from Alice and Bill for this purpose. The software will allow the auction house to conduct live auctions that can be attended by bidders both physically and online. They have hired UltimateSoftTech to build the software. The CTO of UltimateSoftTech, Russell, has assigned you as the business analyst and team lead for the project. You have built a team consisting of a few members, including Renu as the senior developer, Zahid as one of the developers, and Salman as the test engineer.

   Nibir, a director at AntiqueAuc, has been assigned as the project director for AucLive. You, Renu, and Salman had a meeting with Nibir to gather initial requirements for the project. Renu took meeting notes and summarized them as follows:

   AntiqueAuc will prepare a catalog of items to be auctioned, including descriptions, photos, and starting prices. The software will allow an admin to upload all the aforementioned information into the system. The admin can schedule a bidding event for one or more items.

   Potential bidders will be able to register for the auction online and provide their personal identification number, email, and payment information, such as card number, name, and validity. The software will verify the bidders' identities through an email verification to ensure that only verified bidders can participate.

   On the day of the auction, onsite bidders in the bidding room can raise their paddles to place bids, while online bidders can use the software to place their bids in real-time. The software will display the current highest bid and update it in real-time as new bids come in.

   Online bidders can also bid for an item without being present online during the bidding time. They can pre-schedule a bidding item with the maximum limit they are willing to bid. During the live auction, the software will automatically bid on behalf of the bidder with the lowest amount to remain in the bidding process until it reaches the maximum limit of the bidder.

   At the end of the bidding period, the software will determine the winning bid and alert the winning bidder by sending a notification. The winning bidder can then proceed to complete the transaction for the item through a payment gateway. Once the payment is confirmed, the winner will receive a detailed invoice in their email containing information about the item(s), price, and delivery details. The auction house can then arrange for the delivery of the item to the winning bidder.

   Based on the scenario, answer Question 1 and 2. a)

   a) i. Identify users, roles, customers, stakeholders, shareholders, and external systems.   6 +

   ii. Identify at lest 6 requirements in terms of use cases and draw use case diagrams [level-1 and level-2 (if necessary for some use cases)].   8 + 5 (CO2) (PO2)

   iii. Write details for one of the use cases by following the template of Detailed Use Case.

   b) Draw an activity flow diagram for registering a user to the system.   6 (CO2) (PO2)

2. a) Draw a sequence diagram to represent the live auctioning process for the scenario in Question 1.

   10
   (CO2)
   (PO2)

   b) Identify the data flow problems in Figure 1. Draw the correct diagram.
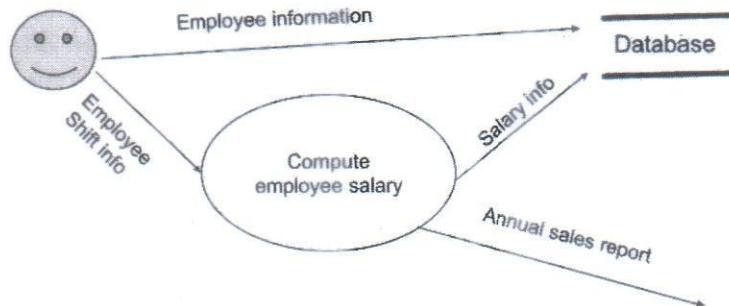
   5
   (CO2)
   (PO2)

Figure 1: An incorrect Data Flow Diagram for Question 2. b)

   c) "Contract Negotiation Vs. Change Requests" – which point of view would you prefer? Justify your answer.

   5
   (CO1)
   (PO2)

   d) What is Agile Manifesto? Differentiate Agile and Traditional software development process by considering the manifesto.

   5
   (CO1)
   (PO1)

3. a) When is software prototyping necessary and why is it consider as a problematic process?

   5
   (CO1)
   (PO1)

   b) What is requirement engineering? Briefly describe each of the activities of requirement engineering.

   10
   (CO1)
   (PO1)

   c) Briefly describe the Extreme Programming (XP) agile software development process with a figure.

   10
   (CO1)
   (PO1)