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

SEMESTER FINAL EXAMINATION   **SUMMER SEMESTER, 2019-2020**
DURATION: 1 Hour 30 Minutes   **FULL MARKS: 50**

CSE 4407: System Analysis and Design
Programmable calculators are not allowed. Do not write anything on the question paper.
There are **3 (three)** questions. Answer **ALL** of them.
Figures in the right margin indicate marks.

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1. a) Compare and contrast agile methodology, rapid application development and SDLC   6
   b) Woody's Supermarket, a small chain of grocery stores, is building a Web site to allow   10
      customers to place orders for groceries and other items they sell. The customer places a Web
      order, the customer master is updated, and an order record is created. The order prints at a local
      store, and the goods are picked from the shelves by the store employees. Customers are sent an
      email notification that their order is ready. When they pick up the order, frozen goods, chilled
      products, and other items are assembled. Draw an **activity diagram** showing the customer
      using the Web site to place an order, verification of the order, order confirmation, order details
      sent to the local store, and a customer email sent to the customer.

2. a) Alamo Foods of San Antonio wants to introduce a new computer system for its perishable   10
      products warehouse. The costs and benefits are as follows:

Year	Costs	Benefits
1	$33,000	$21,000
2	34,600	26,200
3	36,300	32,700
4	38,100	40,800
5	40,000	51,000
6	42,000	63,700

   i. Given a discount rate of 9 percent (.09), perform present value analysis on the data for
      Alamo Foods. (Hint: Use the formula

      $$\frac{1}{(1+i)^n}$$

      to find the multipliers for years 1 to 6.)
   ii. What is your recommendation for Alamo Foods?

   b) An auto rental company wants to develop an automated system that can handle car reservations,   9
      customer billing, and car auctions. Usually a customer reserves a car, picks it up, and then
      returns it after a certain period of time. At the time of pickup, the customer has the option to
      buy collision insurance on the car. When the car is returned, the customer receives a bill and
      pays the specified amount. In addition to renting cars, every six months or so, the auto rental
      company auctions the cars that have accumulated over 20,000 miles. Draw a **use case diagram**
      for capturing the requirements of the system to be developed. Your use case should Include an
      abstract use case for capturing the common behavior among any two use cases. Extend the

diagram to capture corporate billing, where corporate customers are not billed directly; rather, the corporations they work for are billed and payments are made sometime later.

3. a) To give an exam, an instructor first notifies the students of the exam date and the material to be covered. She then prepares the exam paper (with sample solutions), gets it copied to produce enough copies for the class, and hands it out to students on the designated time and location. The students write their answers to exam questions and hand in their papers to the instructor. The instructor then gives the exam papers to the TAs, along with sample solutions to each question, and gets them to mark it. She then records all marks and returns the papers to the students. Draw a **sequence diagram** that represents this process. Make sure to show when is each actor participating in the process. Also, show the operation that is carried out during each interaction, and what its arguments are.   10

   b) One of your systems analysis team members has been discouraging user input on quality standards, arguing that because you are the experts, you are really the only ones who know what constitutes a quality system. In a paragraph, explain to your team member why getting user input is critical to system quality. Use an example.   5