

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)

ORGANISATION OF ISLAMIC COOPERATION (OIC)

Department of Computer Science and Engineering (CSE)

SEMESTER FINAL EXAMINATION

SUMMER SEMESTER, 2022-2023

DURATION: 3 HOURS

FULL MARKS: 100

CSE 4407: System Analysis and Design

Programmable calculators are not allowed. Do not write anything on the question paper.

Answer all 6 (six) questions. Figures in the right margin indicate full marks of questions with corresponding COs and POs in parentheses.

1. a) What are the four advantages of using a data flow approach over narrative explanations of data movement? 4
(CO2)
(PO1)
- b) IUTIAN-Trendz is a mail-order supplier of high-quality, fashionable clothing. Customers place orders by telephone, by mailing an order form included with each catalog, or via the website. The summary of their business activities is given below.
- When customer orders come in, the item master and the customer master files are both updated. If an item is out of stock, the inventory control department is notified.
 - If the order is from a new customer, a new record is created in the customer master file.
 - Picking slips are produced for the customer's order and sent to the warehouse.
 - A shipping statement is prepared
 - The process of shipping a customer order involves getting the goods from the warehouse and matching up the customer shipping statement, getting the correct customer address, and shipping it all to the customer.
 - The customer statement is generated and a billing statement is sent to a customer once a month.
 - An accounts receivable report is sent to the accounting department
- Now, answer the following questions:
- i. Draw a context-level data flow diagram for IUTIAN-Trendz. 5
(CO3)
(PO1)
- ii. Draw the Diagram 0 from the context-level data flow diagram from Question 1.b)i. It should be a logical data flow diagram. 8
(CO3)
(PO1)
2. a) Explain the concept of Version Control and its importance in project development. 5
(CO2)
(PO1)
- b) Describe how a distributed version control system differs from a centralized one. 6
(CO2)
(PO1)
- c) Describe how branching works in Git and its importance. 4
(CO2)
(PO1)

3. a) List three ways to find out about problems or opportunities that might call for a systems solution.
- b) Interglobal Paper Company has asked for your help in comparing its present computer system with a new one its board of directors would like to see implemented. The proposed system and present system costs are as follows:

Table 1: A table of items for that auto handles caption position for Question 3.b

Item	Proposed System Costs	Present System Costs
Year 1		
Equipment Lease	\$20,000	\$11,500
Salaries	30,000	50,000
Overhead	4,000	3,000
Development	30,000	-
Year 2		
Equipment Lease	\$20,000	\$10,500
Salaries	33,000	55,000
Overhead	4,400	3,300
Development	12,000	-
Year 3		
Equipment Lease	\$20,000	\$10,500
Salaries	36,000	60,000
Overhead	4,900	3,600
Development	-	-
Year 4		
Equipment Lease	\$20,000	\$10,500
Salaries	39,000	66,000
Overhead	5,500	4,000
Development	-	-

Now, answer the following questions:

- i. Using break-even analysis, determine the year in which Interglobal Paper will break even.
- ii. Graph the costs and show the break-even point.

6
(CO2)
(PO1)

4
(CO2)
(PO1)

4. a) What is the difference between UI and UX Design?

5
(CO2)
(PO1)

- b) What are the visual design principles in UI? Describe each of them in one sentence.

6
(CO2)
(PO1)

- c) Describe some of the core concepts of UX.

5
(CO2)
(PO1)

- a) List two reasons for taking an object-oriented approach to systems development. 4
(CO2)
(PO1)
- b) What three things must a use case always describe? 3
(CO2)
(PO1)
- c) Describe the use of swimlanes in activity diagrams. 4
(CO2)
(PO1)
- d) BoardBazarAuto is an auto parts recycling center, that uses Ajax on websites for customers to browse for parts. Ajax allows the website to obtain data from the server while the user stays on the original web page. The customer needs to know the make, model, and year of a car as well as the part. If the part is in stock, the description, condition of the part, price, and shipping cost are displayed, with the quantity available for each condition of the part, along with a picture of the part. 6
(CO3)
(PO1)
Draw a sequence diagram using boundary, control, and entity classes for the Auto Part Query for BoardBazarAuto.
6. a) What are the four values that must be shared by the development team and business customers when taking an agile approach? Describe each of them briefly. 8
(CO1)
(PO1)
- b) List four guidelines the analyst should observe in developing a prototype. 4
(CO3)
(PO1)
- c) Harold, a district manager for the multioutlet chain of Sprockets Gifts, thinks that building a prototype can mean only one thing: a nonworking scale model. He also believes that this way is too cumbersome to prototype information systems and thus is reluctant to do so.
- i. Briefly compare and contrast the other three kinds of prototyping that are possible. 6
(CO2)
(PO1)
- ii. Harold has an option of implementing one system, trying it, and then having it installed in five other Sprocket locations if it is successful. With proper justification, name a type of prototyping that would fit well with this approach. 4
(CO2)
(PO1)