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Daffodil International University

Faculty of Science & Information Technology

Department of Computing and Information System

Final Examination, Summer-2025

Course Code: CIS221, Course Title: Information System Engineering

Level: 2 Term: 1

Exam Duration: 2 Hours **Marks: 40**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	**"KIOSK":** A retail store at **Daffodil Smart City (DSC)** has been successfully managing daily sales, customer satisfaction, and inventory levels in its physical outlets now plans to launch an e-commerce website named **"E-KIOSK"**. The management needs to track online sales trends, customer purchase behavior, inventory levels across both online and offline channels, and delivery performance. They also aim to analyze marketing campaign effectiveness, identify fast and slow-moving products, and ensure compliance with online transaction security standards. To develop the e-commerce platform, the store hires a software company and begins by identifying the core objectives and possible risks of the project. Instead of fixing all requirements upfront, the team works in repeated cycles, including planning, designing, prototyping, testing, and receiving feedback. At the end of every cycle, the client reviews progress, suggests improvements, and decides on the next set of features to focus on. This iterative approach helps the team reduce risks, adapt to changes, and gradually refine the system until a complete and reliable e-commerce platform is delivered.			CLO2
	a)	**Explain** how different types of information help the retail store make better decisions for its e-commerce operations.	[5]	
	b)	**Identify** the System Development Life Cycle (SDLC) model used in the scenario and explain why it is suitable.	[5]	
2.	A bank maintains information about its branches, customers, loans, employees, and accounts. The following entities and their attributes are identified: • Entities – Branch (branch-name, branch-city, assets) – Customer (customer-id, customer-name, customer-street, customer-city) – Loan (loan-number, amount) – Employee (employee-id, employee-name, telephone number, start-date) – Account (account-number, balance) – Savings-account (account-number, interest-rate) – Checking-account (account-number, overdraft-amount) Now answer the following questions-			CLO3
	a)	**Sketch** an Entity–Relationship (ER) Diagram for the above banking system.	[5]	
	b)	**Discuss** three security measures that should be implemented in the database to ensure the CIA of customer financial data.	[5]	

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3.	A city-based startup wants to develop an **"Online Food Delivery System"** that allows customers to browse restaurant menus, place orders, and make online payments through web and mobile apps. Restaurants can receive orders, update menu items, and confirm order status. Delivery personnel can view assigned orders, update delivery status, and notify customers upon delivery. Administrators can manage users, restaurants, and delivery personnel, as well as generate reports on orders, revenue, and delivery performance. The system must handle high traffic during peak hours, ensure secure payment transactions, provide real-time tracking of deliveries, and maintain fast response times.			**CLO3**
	a)	**List** the functional and non-functional requirements of the Online Food Delivery System.	[3]	
	b)	**Draw** a Level 1 Data Flow Diagram (DFD) for the above scenario.	[7]	
4.	**CIS Club** is developing a **"Library Management System"**. The system allows students and faculty to search for books, register as users, borrow and return books, and view borrowing history. Librarians can add or update book details, manage user accounts, and generate reports. Before deployment, the System Quality Assurance (SQA) team ensures that the system works correctly, performs efficiently under heavy usage, and is secure from unauthorized access. The SQA team prepares test cases, executes tests, logs defects, and generates test reports, while the SQA manager oversees the process and approves results. Developers fix any reported defects			**CLO4**
	a)	**Design** a Use Case Diagram for the above mentioned Library Management System.	[6]	
	b)	**Suggest** factors that should be considered for the quality assurance of this system and justify their importance.	[4]	