Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Final Examination, Fall 2025
Course Code: CSE112 , Course Title: Computer Fundamentals
Level: 1 Term: 1 Batch: 70

Time: 02:00 Hrs **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.		A video game tracks a player's scores in three levels: Level 1, Level 2, and Level 3.The game calculates the average score and determines the player's status: • If the average is less than 10, the player gets Game Over • Otherwise, the player Levels Up The game should display the average score and the player's status. I. Write an algorithm for the above problem. II. Draw a flowchart for the above problem.	**[5+ 5]**	**CO2**
2.	***a)***	A player's game account was infected by malware that locked all saved game progress and displayed a message demanding payment to unlock it. The malware entered the system when the player downloaded a fake game update. I. Identify the type of network attack and justify your answer. II. State whether it is an **active** or **passive** attack. III. Explain how each of the CIA principles (Confidentiality, Integrity, Availability) was affected by this attack.	**[2+1+3]**	**CO3**
	b)	Imagine you are tasked with designing a wearable health monitoring system for patients with chronic conditions. Your goal is to automatically track vital signs such as heart rate, blood pressure, and oxygen levels, and alert doctors or caregivers if any reading goes outside the safe range. Identify the IoT components you would include in your design (e.g., sensors, controller, communication modules, power source). Explain how these components work together to continuously monitor the patient's health and send alerts when necessary.	**[2+2]**	

3.	*a)*	A group of regional hospitals wants to share patient records, research data, and specialized medical applications securely among themselves. They must comply with strict healthcare regulations and want a cloud environment that allows collaboration, cost-sharing, and customized security controls. I. Identify which type of cloud computing model is most suitable for this scenario and justify why. II. List two key advantages and one limitation of using this cloud model in the given context. III. Provide a real-world analogy to explain how this cloud works.	[1+3+1]	CO3
	b)	A city government has set up a network to connect all its municipal offices, libraries, and public service centers across the city. Employees can access shared databases, city-wide applications, and internal communication tools. The network spans multiple buildings and neighborhoods, covering the entire metropolitan area. It is managed by the city's IT department but can also integrate services from telecom providers. The network speed is moderate, allowing efficient communication and data sharing across the city. Identify which type of network this is and justify your answer. Also, explain how it differs from other types of networks.	[5]	
4.	*a)*	The Department of Computer Science and Engineering launched Daffodil Connect, a social media platform for residents to share updates, report problems, and interact with the community. The system collected data from user posts, comments, reactions, uploaded images, short videos, and real-time feedback reports. Every minute, thousands of new posts, messages, and reactions were generated. Users uploaded photos of events, short video clips of issues like waterlogging, and text-based complaints about city services. The platform also received live activity notifications, such as trending topics and rapidly increasing comment threads. However, some posts contained incomplete information, low-quality images, or repeated complaints, so the system needed to clean the data before analysis. After analyzing the data, the city identified the most discussed problems, discovered areas with frequent complaints, and improved response time by reorganizing service teams. Identify the examples that represent the Volume, Velocity, and Variety of Big Data in the Daffodil Connect platform and justify them.	[3+2]	CO3
	b)	Explain the step-by-step client–server process that occurs when a user enters a URL in a web browser until the webpage is displayed.	[5]	