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Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Final Examination, Summer 2025

Course Code: CSE112 , Course Title: Computer Fundamentals

Level: 1 Term: 1 Batch: 69

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)*	You are required to develop a simple program that can take three numbers as input from the user and determine which number is the largest among them. This program should correctly identify and display the largest number, even if two or more numbers are equal. Write an algorithm and draw the flowchart to solve the problem: Find the largest among three numbers A, B, and C.	[4 + 4]	CO2
	b)	Mention two advantages of using a flowchart before writing code.	[2]	
2.	*a)*	An online education platform recently experienced a security breach. A student reported receiving a suspicious email asking them to verify their password via a fake login page. Later, the attacker used that password to log in as the student, view private grades and payment details, and attempt to change the user's registered email. The attacker's location matched an unusual login detected by the system at midnight. Identify the type of networking attack, name the attack category [active or passive] and violate CIA principles, and explain *how* each was compromised in this scenario. Suggest a distinct defense measure for this scenario and explain how it helps protect against such attack.	[1+1+2 +2]	CO3
	b)	Imagine you are a part of a student club planning an election for club president. Usually, a faculty member verifies and records votes. However, there's debate over fairness. Explain how blockchain's characteristics could be used to design a tamper-proof digital voting system for the election. Illustrate through a diagram how blockchain works.	[2+2]	

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3.	*a)*	A startup software company wants to develop and test a web application quickly without investing heavily in physical hardware. They want to focus on coding and deployment while relying on a third-party provider to manage servers, storage, and networking. Based on this scenario, which cloud service model or deployment model would be most suitable for the company? Justify your answer and mention two possible risks or challenges they may face with this model.	[3+2]	CO3
	b)	Imagine you are tasked with designing a smart irrigation system for agricultural fields to optimize water usage and improve crop growth. Your goal is to automate the irrigation process by monitoring soil conditions and controlling water flow without manual intervention. Identify the IoT components you would include in your design, and explain how these components interact with each other to monitor and maintain the right soil moisture level.	[5]	
4.	*a)*	Mention the 5 V's of Big Data. Provide a clear explanation and example for each characteristic.	[5]	CO3
	b)	A new startup, "AmarCompany", aims to launch a social networking platform for professionals. The platform requires a highly interactive and real-time user feed, a robust backend to manage user profiles and connections, and must be prepared for rapid scalability as the user base grows. The company has a small development team and a moderate budget, prioritizing fast development cycles and frequent feature updates. As a web technology consultant, propose a suitable technology stack (frontend and backend) and a hosting solution for AmarCompany's platform. Justify your selections by linking them to the company's requirements such as interactivity, scalability, development speed, and cost-effectiveness. Additionally, explain why incorporating Responsive Web Design (RWD) principles is essential for such a platform and how it contributes to the overall user experience.	[2+1.5 +1.5]	