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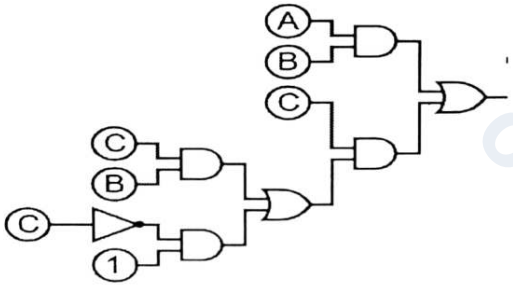
Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Final Examination, Fall 2023
Course Code: CSE112, Course Title: Computer Fundamentals
Level 1 Term 1 Batch: 65

Time: 2:00 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)***	The manufacturer has designed a logic circuit that is not cost-effective. To address this issue, we will derive the Boolean function represented by the circuit and then minimize the redundancy to simplify and to make it cost-effective. 	**[6]**	**CO3**
	b)	Using Boolean identities, reduce the given Boolean expression: $F(X, Y, Z) = X.Y + Y.Z + Y.Z + X.Y.Z$ Now, explain the comparison between the simplified and original expression.	**[4]**	
2.	***a)***	As a network engineer assigned to address a communication problem between two devices on a network, how would you leverage the OSI model to articulate the operational processes at both the sender and receiver ends?	**[4]**	**CO1**
	b)	What are the key advantages associated with Distributed Computing Systems, and how do these benefits contribute to the efficiency and performance of large-scale computing environments?	**[4]**	
	c)	How do process management mechanisms contribute to the efficient operation of computer systems?	**[2]**	
3.	***a)***	Suppose, you have been tasked with creating a basic calculator program capable of performing addition, subtraction, multiplication, and division based on user choice. Now design a clear and concise pseudo code and flowchart that represents how the program will work, including decision points and symbols for clarity and ease of use.	**[6]**	**CO4**
	b)	Imagine you are teaching a programming class to your juniors. How would you explain the concept of functions and variables, and how can they differentiate null and void?	**[4]**	
4.	***a)***	In Bangladesh, a high school student becomes a victim of a cyberbullying attack through social media platforms, experiencing harassment and threats online. The incident is causing emotional distress and affecting the student's well-being. Given the scenario of a cyberbullying attack in Bangladesh, discuss the provisions of the Digital Security Act and how it addresses cyberbullying crimes. What legal actions can the victim take, and how does the Digital Security Act contribute to the prevention and prosecution of cyberbullying offenses in the country?	**[6]**	**CO1**

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	b)	Consider yourself a software developer who has recently created a new mobile application and designed a distinctive logo for its branding. i. Specify the type of Intellectual Property (IP) protection relevant to both the mobile application and the logo. ii. Explain the importance of fair use practices for developers and users in the mobile application ecosystem.	[4]	

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