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Daffodil International University
Faculty of Science & Information Technology
Department of Software Engineering
Final Examination, Spring 2026
Course Code: SE321; Course Title: Software Engineering Web Application
Sections & Teachers: 41 (A,B - SSA), (C,D - DDK), (E - ARN), (F,G,H - MNA), (I,J - SSR), (K,L,M - MRD), (N - PS)

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	*a)*	Your development team has been assigned to redesign an outdated online ticket booking system. The system is difficult to maintain due to tightly coupled code. In this context, **illustrate** how MVC works and explain the responsibilities of Model, View, and Controller.	**[Marks-5]**	**CLO-2** *Level-3*
2.	*a)*	<!DOCTYPE html> <html lang="en"> <head> <meta charset="UTF-8"> <title>Double Click Event</title> </head> <body> <button class="btn">Button One</button> <button class="btn">Button Two</button> <script> // TODO </script> </body> </html> **Construct** a JavaScript function that attaches a double click event listener to all buttons with the class btn. When any button is double clicked: I. Change the text color of the clicked button to green. II. Display the message "Have a nice day!" on the screen.	**[Marks-5]**	**CLO-3** *Level-6*
	b)	**Construct** a JavaScript array data with 3 patient objects. Each object should have: ➢ patientId: a unique number ➢ appointments: an array of objects, each with: o doctorName o date ➢ disease: string ➢ isAdmitted Instructions: a. Each patient must have at least 2 appointments b. Use both true and false for isAdmitted	**[Marks-5]**	

3.	*a)*	<?php
		function findmax($nums) {
		// Solution code will go here
		}
			[Marks-5]	**CLO-4**
				Level-6

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		// Example Usage
		$nums1 = [10, 20, 5, 40];
		$nums2 = [3, 8, 1];
		echo findmax($nums1); // Output: 40
		echo findmax($nums2); // Output: 8
		?>
		Construct the solution using PHP.
		Explanation: Given an array of numbers, you need to determine the maximum (largest) element present in the array. You are not allowed to use the built-in max() function.		

	b)	**Design** a system using PHP OOP concepts: 1. Create a class Employee with a method calculateSalary() returning 0 by default. 2. Extend the Employee class to create a FullTimeEmployee class, with a monthlySalary attribute initialized through the constructor. Override the calculateSalary() method to calculate the final salary after deducting 5% tax from the monthly salary. 3. Instantiate the FullTimeEmployee class with an initial salary, and print the final salary after tax using the calculateSalary() method.	**[Marks-10]**	
	c)	In a Product Inventory System, the system should allow an administrator to perform the following operations: Add New Product Records: ➢ The system should allow the administrator to add new product records, including details such as the product's name, price, and product code. Update a Product Record: ➢ The system should allow the administrator to update an existing product record in the database by providing the product's unique identifier (e.g., product code) and modifying details such as the name or price. **Construct** a PHP application using MySQL for database interaction to implement the Add and Update functionality that allows an administrator to: I. Add a new product record to the database. II. Update an existing product record in the database based on the product's unique product code.	**[Marks-10]**	

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