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Daffodil International University

Department of Software Engineering
Faculty of Science & Information Technology
Final Examination, Spring 2025

Course Code: SE 111 Course Title: Computer Fundamentals

Sections & Teachers: NJM(A,B), MRD(C,D), SI(E,I,J), MKS(F), TMA(G,H), KR(K,M), KF(L)

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)***	You are the Software Engineer of X Software Company, and you need to calculate the monthly salary of employees through a system. Calculate the total salary by- • **Adding the allowances Rent, Medical with the base salary. Deducting the tax, provident fund, and other expenses.** •**Add Bonus-** • **10% if performance rating is greater than or equal to 8.** • **20% if performance rating is in between 5 and 7** • **0% if performance rating is less than 5** **Construct** an algorithm and **Draw** the flowchart for given scenario.	**Marks-15**	**CLO-3** *C-3*

	b)	**Detect** errors in the following C code, **update** it after correcting the errors, and then write down the corrected version. Also, **show** the expected output when the input is:
		
		1. 20
		2. 7
		3. 10
		
		C Code:
		
		#Include <studio,h>
		INT main() {
		int num;
		print("Enter a number:);
		scan("%d" num);
		if (num % 2 = 0 && num > 10);
		{
		printl("The number is even and greater than 10\n"):
		}
		else if (num % 2 = 1)
		{
		prnt("The number is odd\n")
		}
			Marks-5	

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```
else {
  prnt("The number is even and less than or equal to 10\n")
  return 1;
}
```

	c)	**Scenario-1:** In the Software Engineering Department, all devices are connected through a **single central cable** that acts as the communication backbone. Data sent from one device travels along the cable and is accessible by all other devices. If the main cable fails, the entire network stops functioning. **Scenario-2:** In the Business Studies Department, the network is set up to provide **local connectivity** across a single building. Devices are placed within a close physical range, and they are connected to each other. But this is costly as compared to the other network topologies. **Determine** the network topology or network type based on the given descriptions for the both scenarios. **Provide** your reasoning and a diagram for each.	**Marks-5**	
	d)	ABC Institute maintains all student, course, and instructor information in a single table. This leads to repeated data, inconsistencies in course names, and difficulty updating instructor details. Managing records has become inefficient and error-prone. The institute now seeks a better way to organize the data to reduce duplication, ensure accuracy, and make updates easier across the system. **Determine** a technique that they can organize their data according to DBMS..	**Marks-5**	
2.	*a)*	While testing an application, you notice that users can enter data into input fields without any validation or filtering. An attacker could exploit this vulnerability by entering malicious commands in the fields, which the application then executes. This results in unauthorized actions, potentially compromising the system's integrity and allowing attackers to gain control or access sensitive information. **Detect** what type of vulnerability mentioned in the above scenario and **determine** what should be followed by developers to prevent any type of vulnerabilities.	**Marks-5**	**CLO-4** ***C-4***
	b)	Two tech companies, Enosis and Brain Station, launched secure chat apps. Enosis's "Let's Talk" uses a shared secret key for encryption and decryption. Brain Station's app, more popular, uses separate keys for sender and receiver, enhancing security. Both apps protect user credentials by converting passwords into fixed-length hashes, ensuring safety even if the database is breached. **Identify** the technology mentioned in the scenario used in Brain Station's chat application. **Explain** how it works with appropriate diagram.	**Marks-5**	