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Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Semester Final Examination, Spring 2025

Course Code: CSE423 , Course Title: Information Security

Level: 3 Term: 2 Batch: 62

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 financial institution in Bangladesh is evaluating the risks associated with its online banking services and internal management systems. The **Online Banking Portal** and **Transaction Processing System** are classified as high-impact assets due to their critical role in handling customer transactions with medium likelihood. The **Customer Support System** and **Employee Management System** are assessed as medium-impact and likelihood, as their compromise could disrupt operations but not directly affect financial transactions. Lastly, the **Internal Document Repository** has minimal impact with medium likelihood since it mainly stores administrative records.		**CO2**
	a)	Based on the provided data, **List** 5 risk scenarios that could occur, (*one for each asset mentioned above*) and **Analyze** the overall risk rating for the institution by calculating the risk level for each asset. **List** prioritized security measures based on the results and suggest which assets should receive the highest level of protection.	**[5]**	
	b)	Suppose an incident has occurred where the *Online Banking System*, the *Transaction Processing System* and *the Customer Support System* are simultaneously facing significant downtime. Upon investigation by the Incident Management team, it was found that the server hosting these applications has been facing DDoS attacks from IP Addresses outside of the country. **Analyze** the steps taken by the IM team mentioning what was done in each step of the ***Incident Handling and Response process*** based on the above scenario.	**[5]**	
2.		An e-commerce platform experiences a potential security breach when an unusual login attempt is detected, *prompting additional verification steps for the user*. At the same time, abnormal traffic is noticed from a suspicious IP range, and the *system quickly limits access to prevent service disruption*. An employee receives an email requesting a immediate password reset due to a "security update," but *the message is flagged as potentially malicious and is automatically quarantined*. The system then compiles a detailed report on these incidents, offering recommendations to improve the platform's defenses.		**CO2**

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	a)	**Identify** the applications of AI and ML that has been used to safeguard the e-commerce platform based on the scenario.	[5]	
3.		Daffodil International University has installed a Datacenter consisting of several high performance server computers. These servers are very expensive and contain sensitive data related to the operations of the university. For this reason, the servers need to be kept safe from outside cyber attacks orchestrated through the network they are connected to. The Network Engineers decided that they would only allow communications with the servers from devices inside the university network.		**CO1**
	a)	**Describe** the functions of a Firewall. **Identify** with proper justification which type of Firewall is best suited for the application described in the scenario.	[2+3]	
	b)	**Explain** how Encryption can help strengthen the Security of the Datacenter and **infer** a cost effective and optimized encryption method in the above case with proper justification.	[2+3]	
	c)	The Daffodil authority is processing all its 1Card transactions within the Datacenter. **Analyze** how this process can be made more transparent and secure through the use of Blockchain technology.	[5]	
4.		Arif, a freelance graphic designer in Bangladesh, creates original logo designs for various clients. One day, he discovers that a local e-commerce company is using one of his designs without permission. When he contacts them, they claim they found the logo and holograms on a public website and assumed it was free to use. Arif then consults a lawyer and learns that his work is protected under the Bangladesh Digital Security Act, 2023. He decides to take legal action against the company for unauthorized use of his intellectual property.		**CO3**
	a)	**Identify** which element of Intellectual Property is addressed in the above scenario along with proper justification.	[3]	
	b)	**Analyze** which section of the Digital Security Act of 2023 is violated and the associated punishment for the convicted.	[7]	

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