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Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science and Engineering
Mid Semester Examination, Spring-2024
Course Code: CSE334 Course Title: Pervasive Computing
Level: L3 Term: T2&T3

Exam Duration: 1.5 Hours **Marks: 25**

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)*	Imagine you're a resident of a busy urban area, deeply concerned about the safety of school-going children amidst numerous potential hazards. Leveraging your expertise in pervasive computing systems, **craft** a comprehensive solution to not only guarantee the safety of these children but also implement robust security measures effectively. . This solution encompasses both software and hardware components to address various aspects of child safety and security.	5	CO1
2.	*a)*	Imagine you are a system architect tasked with **examining** the implementation of a smart card-based access system for a secure corporate facility. Outline the key considerations and advantages of employing smart cards in this scenario, with a focus on security, authentication, and access control. Assess how the internal structure of the smart card's computer components contributes to maintaining the integrity of the access system. Furthermore, propose potential applications within the corporate environment where smart cards could extend beyond physical access control. Evaluate the necessary security features and communication protocols essential for establishing a robust and efficient smart card-based access system in this context.	5	CO2
	b)	**Compare and contrast** CDMA (Code Division Multiple Access) and TDMA (Time Division Multiple Access) in the context of wireless communication. Explain the underlying principles of each technique and provide a real-world example where CDMA is beneficial, emphasizing how its specific advantages address the communication needs of that scenario. Similarly, offer a different real-world example where TDMA is preferable, highlighting the specific advantages of TDMA in meeting the communication requirements of that context.	4	
	c)	As an IoT engineer, how would you **scrutinize** ensuring seamless connectivity between a Smart Control device and the network, considering the significance of data transfer protocols?	3	
3.	*a)*	Imagine you are a cybersecurity analyst tasked with ensuring the security of a sensitive communication system. The system employs the RSA algorithm with prime numbers p=5 and q=11 for data encryption. The encryption key is set to 27. In this scenario, elucidate the step-by-step process you would follow to determine the value of the decryption key. Further, **Assess** how the chosen prime numbers (p and q) and the encryption key enhance the overall security of the communication system.	8	CO3