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Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science and Engineering
Midterm Examination, Spring 2025
Course Code: CSE 333, Course Title: Software Engineering
Level: 3 Term: 3

Time: 1:5 Hrs. **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.]***

The **Smart Agriculture Management System** is a cloud-based platform that integrates IoT, AI, and data analytics to help farmers optimize crop production, automate irrigation, and monitor soil conditions in real time. The Smart Agriculture Management System is designed to enhance precision farming by leveraging IoT sensors, AI-powered analytics, and cloud computing. The system will monitor critical environmental parameters such as soil moisture, temperature, humidity, and weather conditions to provide real-time insights for farmers. AI-driven predictive models will help in crop health assessment, disease detection, and yield forecasting. The system will include modules for automated irrigation control, fertilizer and pesticide tracking, inventory management, and financial record-keeping. A web-based dashboard and mobile application will allow farmers to access data, generate reports, and receive notifications for weather alerts or equipment failures. Vendors supplying seeds, fertilizers, and machinery will have a dedicated portal for order management and tracking. The system will ensure data security, support multi-user access, and offer scalability for large-scale farming operations. Integration with government agricultural databases and compliance tracking will help farmers adhere to regulations. The platform will support AI-based decision-making, providing real-time recommendations for crop rotation, water usage, and pest control, ultimately increasing productivity and sustainability in agriculture.

1.	**Discuss** the software development model that will be suited best for the above-mentioned scenario and justify your answer.	[5]	CO1
2.	**Differentiate** the functional and Non-functional requirements for given scenario.	[5]	CO2

The Smart Wearable for Elderly Health Monitoring is an AI-powered, IoT-enabled device designed to continuously track and analyze the health metrics of senior citizens, ensuring their safety and well-being. Your task is to create details scenario for Smart Wearable for Elderly Health Monitoring System.

3.	**Construct** the use case diagram for Smart Wearable for Elderly Health Monitoring system (at least three actors, five use cases, and include at least one «include» or «extend» in relationship).	[5]	CO3
4.	**Illustrate** the Use Case description for any two use case of user process.	[5]	CO2
5.	**Construct** the activity diagram (one activity) and Sequence (one activity) diagram for user process.	[5]	CO3