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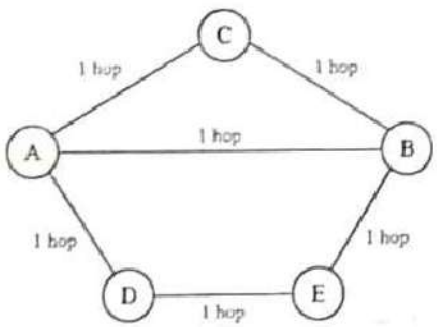
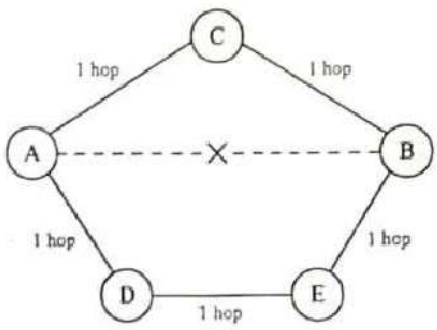
Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Midterm Examination, Fall 2026
Course Code: CSE 453, Course Title: Wireless Sensor Network
Level: 4 Term: 2 Batch: 65

Time: 01:30 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.]

1.	*a)*	Demonstrate Ad-hoc network in terms of Wireless sensor network (WSN).	[02]	CO1
	b)	Apply your knowledge of WSNs to propose a suitable strategy for the artificial retina prototype.	[03]	
2.	*a)*	An agricultural farm uses a WSN to monitor soil moisture across a large field. The sink node periodically requests moisture data from specific regions. Since the sensor nodes operate on limited battery power, the network must avoid unnecessary transmissions while efficiently delivering the requested data. Select appropriate routing protocol which would be most suitable for this scenario and explain how it would operate.	[05]	
	b)	A smart system uses wireless sensor nodes to monitor temperature. Each sensor node collects environmental data, processes the readings, and wirelessly transmits the information to a sink node. Construct a block diagram illustrating all the fundamental functional components of the sensor node and explain the function of each component.	[05]	
3.	*a)*	Consider a wireless Ad-hoc network consisting of five nodes (A, B, C, D, E) operating under the Optimized Link State Routing (OLSR) protocol. Develop the separate routing table for Node A under condition.  Condition 1: Network Topology (Normal)  Condition 2: Link A–B Fails	[05]	CO2
	b)	A military surveillance WSN monitors a remote border area for suspicious movements and environmental changes. Sensor nodes have limited battery power and must provide timely alerts while ensuring long-term operation. I. Select a suitable routing protocol for detecting critical events and justify your choice. II. Compare two network configurations one using group leaders and another using a chain for energy efficiency and network lifetime.	[02+03]	