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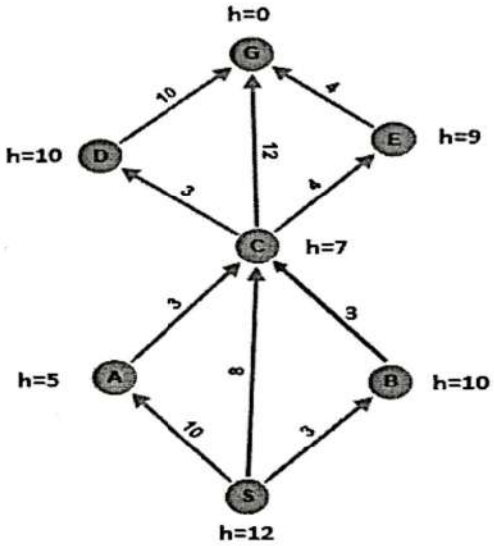
Daffodil International University

Faculty of Science & Information Technology
Department of Computer Science & Engineering
Midterm Examination, Fall 2025
Course Code: CSE316, Course Title: Artificial Intelligence
Level: 3 Term: T2 Batch: 64

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.		Suppose a Smart Home Energy Management System (SHEMS) that controls the use of electricity in a house. It monitors energy consumption from lights, air conditioners, washing machines, and other devices. The system should automatically adjust energy usage to minimize electricity bills while maintaining user comfort. It learns from user behaviors (like when they usually turn on lights or use appliances) and reacts to changes in electricity price or weather.		
	a)	Based on the scenario, **Define** the PEAS description and type of task environment for the Smart Home Energy Management System (SHEMS).	[5]	CO1
	b)	Decide which type of agent would be most appropriate for this system and **Explain** your answer with the working model.	[5]	
2.	*a)*	 Figure: 1 Draw the search tree for Figure 1. Now **Develop** the List and compare the order in which the nodes of Figure 1 are expanded for the following search strategies for S to G. i. Uniform cost search ii. Greedy best-first search iii. Local beam search (β=2) iv. A* Search	[6]	CO2

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	b)	**Construct** solution for the following initial population, perform the three major operations of the genetic algorithm for 8 queen problem. 46162774 54174633 46637346 54765435	[4]	
3.	*a)*	**Illustrate** the architecture of an Expert System and describe the functions of the Knowledge Base and Inference Engine with an example.	[5]	**CO3**

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