ourdiu.com | Shared by SUPAN ROY

Daffodil International University

Department of Software Engineering
Faculty of Science & Information Technology
Midterm Examination, Fall 2025
Course Code: SE333; Course Title: Artificial Intelligence

Sections & Teachers: A (MAT), B (AF), C (MMN), D, E, F (NF), G (MMN), H (NF), I (MMN)

Time: 1 Hour 30 Mins **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 team of Artificial Intelligence (AI) engineers is working on a project to introduce search capability to resource-constrained systems. That is why, instead of advanced Machine Learning (ML), they must use simple search algorithms.			CLO-1 *Level-C2*
	(a)	Now, **observe** the situation and categorize the different types of search algorithms according to the similarity and dissimilarity of their characteristics.	[Marks-8]	
	(b)	After that, prepare a list of potential terminologies necessary to implement the search algorithms and define them with relevant examples so that the team can easily implement the project.	[Marks-7]	
2.	Mr. Red has a class at 8:30 AM on the 12th floor, and he needs to take the lift to get there. Normally, he wakes up early in the morning, but the cool weather and the sound of rain and thunder since midnight made his sleep deeper than usual. As a result, he overslept. When he finally woke up, he suddenly remembered that an assignment was due today and had to finish it right away. Meanwhile, the ongoing rain and thunder caused frequent power outages, which might delay the lift and make him even later for his class.			CLO-2 *Level-C3*
	(a)	Analyze the story carefully, identify the random variables, and define the corresponding elements of these random variables.	[Marks-2]	
	(b)	Using appropriate symbols, **implement** a Bayesian network to predict if Mr. Red will reach the classroom early, late, or very late.	[Marks-2]	
	(c)	After carefully analyzing the network you created, prepare a list of joint probability tables necessary to train the network. Assume realistic probabilities for these joint probability tables.	[Marks-3]	
	(d)	Finally, explain the working principle of the Bayesian network you implemented, using the concept of conditional probabilities along with relevant mathematical representations.	[Marks-3]	