

Quiz-2

Course Code: CSE316

Course Title: Artificial Intelligence

Time: 35 minutes

1	The following graph represents a set of connected cities with their step costs (in km) and heuristic values $h(n)$ (estimated straight-line distance to the goal city 'G'): <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>City</th><th>Connected to (cost in km)</th><th>$h(n)$ (km)</th></tr> </thead> <tbody> <tr> <td>A</td><td>B(2), C(3)</td><td>7</td></tr> <tr> <td>B</td><td>D(4), E(6)</td><td>5</td></tr> <tr> <td>C</td><td>F(5)</td><td>4</td></tr> <tr> <td>D</td><td>G(3)</td><td>2</td></tr> <tr> <td>E</td><td>G(5)</td><td>1</td></tr> <tr> <td>F</td><td>G(6)</td><td>2</td></tr> <tr> <td>G</td><td>–</td><td>0</td></tr> </tbody> </table>	City	Connected to (cost in km)	$h(n)$ (km)	A	B(2), C(3)	7	B	D(4), E(6)	5	C	F(5)	4	D	G(3)	2	E	G(5)	1	F	G(6)	2	G	–	0	
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(a)	Analyze the given problem and select the most appropriate informed search algorithm (from the slides) to reach the goal 'G' from 'A'. Explain your choice by comparing at least two algorithms and mentioning the role of the admissibility property in your selection.	[3]																								
(b)	Using the chosen algorithm, show the sequence of node expansions and compute all relevant $g(n)$, $h(n)$, and $f(n)$ values until the goal is reached.	[6]																								
(c)	Suppose that the heuristic values of nodes B and C are slightly overestimated . Discuss how this affects the admissibility of the heuristic and analyze the impact on the optimality and performance of your chosen algorithm.	[3]																								
(d)	You are part of a team developing a medical expert system that recommends possible diseases based on patient symptoms. The system uses a knowledge base, inference engine, and explanation facility . Explain how forward chaining and backward chaining would behave differently in this diagnostic system. Provide an example scenario for each.	[3]																								