



Daffodil International University

Department of Computer Science and Engineering

Faculty of Science & Information Technology

Midterm Examination, Fall 2021 @ DIU Blended Learning Center

Course Code: CSE315, Course Title: Artificial Intelligence

Level: 3 Term: 1 Section: D, E

Instructor: MKA Modality: Open Book Exam

Date: Wednesday (17 November, 2021) Time: 09:00 AM - 11:30 AM

Two and half hours (2:30), Marks: 25

Answer all of the following questions. Figures on the right-hand side indicate full marks.

1.

- a) Consider an automated air-conditioner that turns on when the room temperature is 23 degrees Celsius or greater and turns off when the room temperature is less than 23 degrees.

Explain whether the air-conditioner is an instance of a *simple reflex agent*, a *model-based agent*, or a *goal-based agent*.

[2]

- b) Draw the state space graph for the following *3-puzzle* problem where the blank tile can be moved in *up*, *down*, *left* or *right* directions.

[4]

Start state

3	2
1	

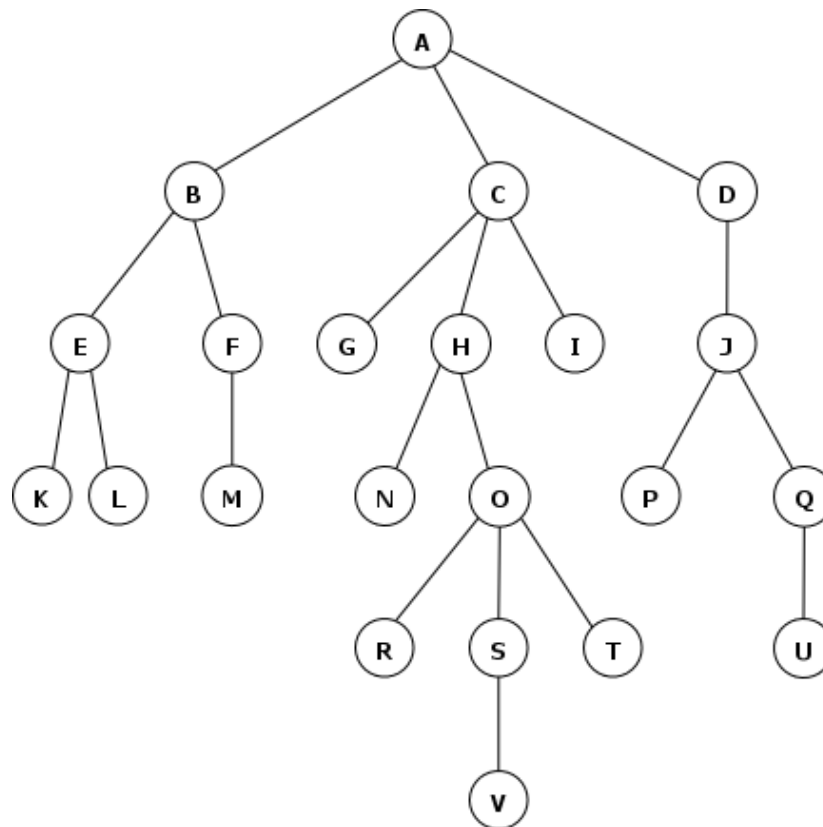
Goal state

	1
2	3

[Please Turn Over]

2. Perform *Iterative Deepening Search (IDS)* on the following tree to go from *A* to *O* showing all the necessary steps. Also, write down the path taken to reach from *A* to *O*.

[6]



3.

- a) Write down the PEAS description for the following agents

[4]

- i. Plant watering robot
- ii. Cake making robot

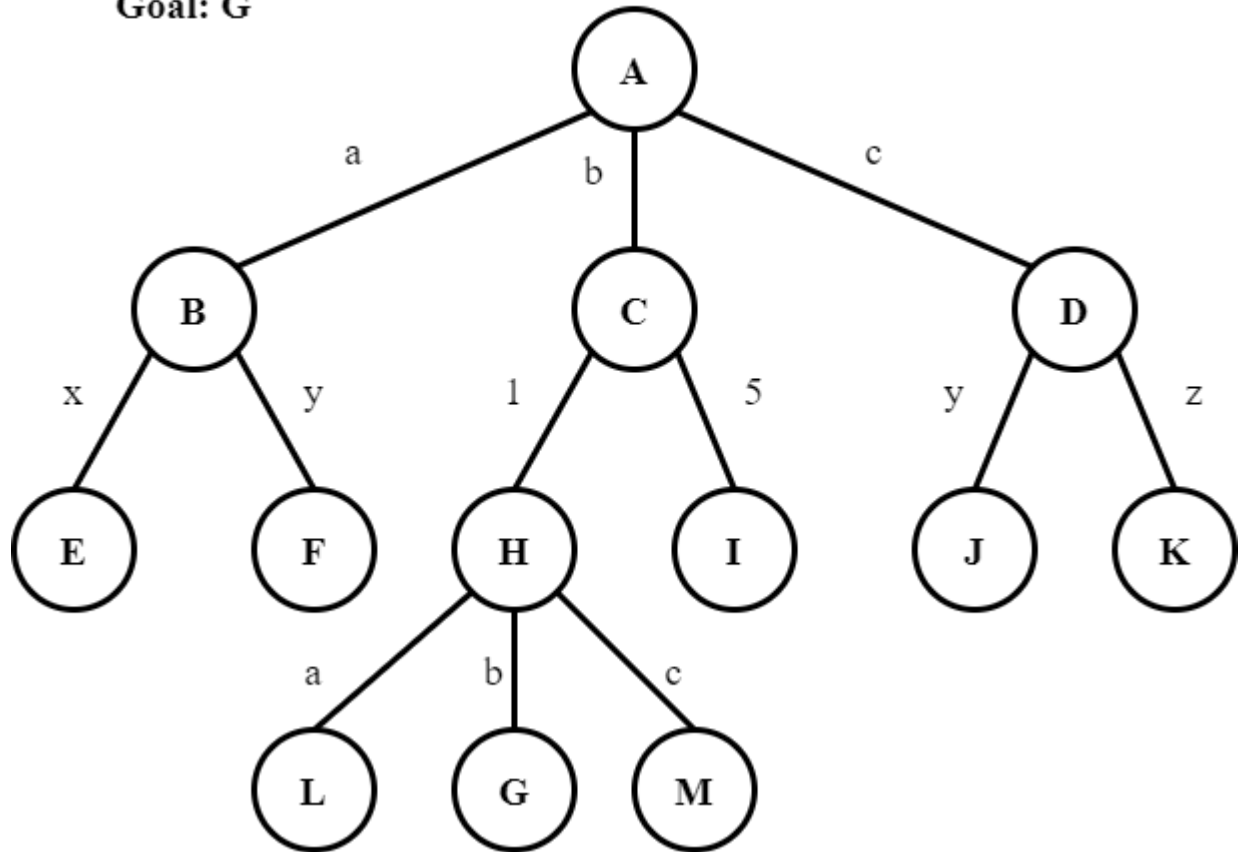
- b) Explain the difference between *Backward chaining* and *Forward chaining* with an example

[2]

[Please Turn Over]

4.

Start: A
Goal: G



- a) Perform *Uniform Cost Search (UCS)* on the above tree showing all the steps and total cost where you will get the values of **a**, **b**, **c**, **x**, **y**, and **z** from your student id.

(If your student id is **193-15-12345**, then **a = 1**, **b = 9**, **c = 3**, **x = 3**, **y = 4**, **z = 5**. If any of the variable value is **missing or 0(zero)**, then replace it with **5**)

[5]

- b) What are the disadvantages of *Depth First Search*? How can these disadvantages be removed?

[2]
