



ADAMAS UNIVERSITY
END-SEMESTER EXAMINATION : JANUARY 2021
(Academic Session: 2020 – 21)

Name of the Program:	MCA	Semester:	V
Paper Title :	Artificial Intelligence	Paper Code:	ECS53103
Maximum Marks :	40	Time duration:	3 hours
Total No of questions:	8	Total No of Pages:	2

Answer all the Groups

Group A

Answer all the questions of the following

$5 \times 1 = 5$

1. a) Greedy Best First Search is not _____, and it is incomplete.
b) A* algorithm is guaranteed to find an optimal solution if _____ never overestimates h.
c) Let $f(x,y,z)$ be the statement " $x+y=z$ ". What will be the quantification for it?
d) The Graph Coloring problem can be solved using _____ techniques.
e) _____ uses limit for performing searching.

GROUP –B

Answer *any three* of the following

$3 \times 5 = 15$

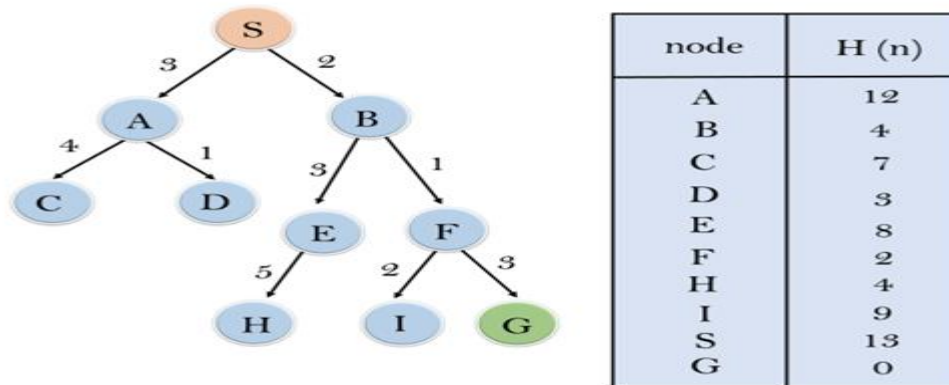
2. Explain about **Iterative deepening depth-first search** with example.
3. Explain any two type of AI agent in details.
4. Explain the difference between following environments:
 - a. Fully observable and Partially Observable
 - b. Episodic vs Sequential
5. "Gold and silver ornaments are precious". Find the most appropriate logical formula to represent the statement.

GROUP –C

Answer *any two* of the following

$2 \times 10 = 20$

6. Find the the solution for the following image with proper explanation.



7. Suppose a genetic algorithm uses chromosomes of the form $x = abcdefgh$ with a fixed length of eight genes. Each gene can be any digit between 0 and 9. Let the fitness of individual x be calculated as:

$$f(x) = (a + b) - (c + d) + (e + f) - (g + h)$$

let the initial population consist of four individuals with the following chromosomes:

$$x_1 = 6\ 5\ 4\ 1\ 3\ 5\ 3\ 2$$

$$x_2 = 8\ 7\ 1\ 2\ 6\ 6\ 0\ 1$$

$$x_3 = 2\ 3\ 9\ 2\ 1\ 2\ 8\ 5$$

$$x_4 = 4\ 1\ 8\ 5\ 2\ 0\ 9\ 4$$

Evaluate the fitness of each individual, showing all your workings, and arrange them in order with the fittest first and the least fit last.

8. Explain about Hill Climbing Algorithm in details.
