

--	--	--	--	--	--	--	--	--	--



GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Seventh Semester – Regular) Examinations, November – 2022

BOEEC7031 – Artificial Intelligence

(ECE)

Time: 3 hrs

Maximum: 70 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)

(1 x 10 = 10 Marks)

- | <u>Q.1. Answer ALL questions</u> | [CO#] | [PO#] |
|--|-------|-------|
| a. Artificial Intelligence is about_____. | 1 | 2 |
| (i) Playing a game on Computer | | |
| (ii) Programming on Machine with your Own Intelligence | | |
| (iii) Making a machine Intelligent | | |
| (iv) Putting your intelligence in Machine | | |
| b. Who is known as the -Father of AI"? | 1 | 1 |
| (i) Fisher Ada | | |
| (ii) Alan Turing | | |
| (iii) John McCarthy | | |
| (iv) Allen Newell | | |
| c. The application/applications of Artificial Intelligence is/are | 1 | 2 |
| (i) Expert Systems | | |
| (ii) Vision Systems | | |
| (iii) Gaming | | |
| (iv) All of the above | | |
| d. If a robot is able to change its own trajectory as per the external conditions, then the robot is considered as the__ | 2 | 1 |
| (i) Mobile | | |
| (ii) Open Loop | | |
| (iii) Non-Servo | | |
| (iv) Intelligent | | |
| e. A technique that was developed to determine whether a machine could or could not demonstrate the artificial intelligence known as the__ | 2 | 1 |
| (i) Boolean Algebra | | |
| (ii) Logarithm | | |
| (iii) Turing Test | | |
| (iv) Algorithm | | |
| f. The component of an Expert system is_____. | 2 | 1 |
| (i) Knowledge Base | | |
| (ii) User Interface | | |
| (iii) Inference Engine | | |
| (iv) All of the above | | |
| g. Which algorithm is used in the Game tree to make decisions of Win/Lose? | 2 | 3 |
| (i) Heuristic Search Algorithm | | |
| (ii) Greedy Search Algorithm | | |
| (iii) DFS/BFS algorithm | | |
| (iv) Min/Max algorithm | | |
| h. An AI agent perceives and acts upon the environment using_____. | 2 | 2 |
| (i) Sensors | | |
| (ii) Perceiver | | |
| (iii) Actuators | | |
| (iv) Both (i) and (iii) | | |
| i. Which rule is applied for the Simple reflex agent? | 3 | 1 |
| (i) Simple-action rule | | |
| (ii) Simple &Condition-action rule | | |
| (iii) Condition-action rule | | |
| (iv) None of the above | | |
| j. In the Wumpus World Problem, the reason for the uncertainty is that the agent's sensor gives only__ | 4 | 2 |
| (i) Full & Global information | | |
| (ii) Partial & Global Information | | |
| (iii) Full & local information | | |
| (iv) Partial & local Information | | |

PART – B: (Short Answer Questions)

(2 x 10 = 20 Marks)

Q.2. Answer ALL questions

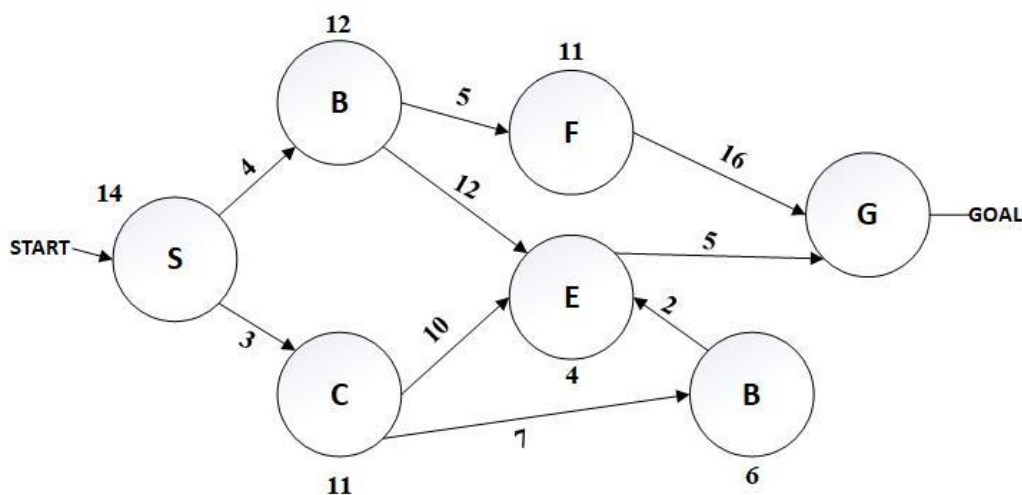
	[CO#]	[PO#]
a. What is AI? What are its applications?	1	1
b. What is an agent? What are different types of AI agents?	2	1
c. What is PEAS representation?	2	2
d. What is Turing test in AI?	2	1
e. What is the cost function for A* Algorithm?	2	2
f. What are the conditions where Hill Climbing Algorithm fails?	3	3
g. What is the advantage of Informed search Algorithm?	1	3
h. What is the space and time complexity for Bidirectional search algorithm?	1	3
i. What is the advantage of Breadth first search?	1	2
j. What is DFID? What are its advantages?	1	2

PART – C: (Long Answer Questions)

(10 x 4 = 40 Marks)

Answer ALL questions

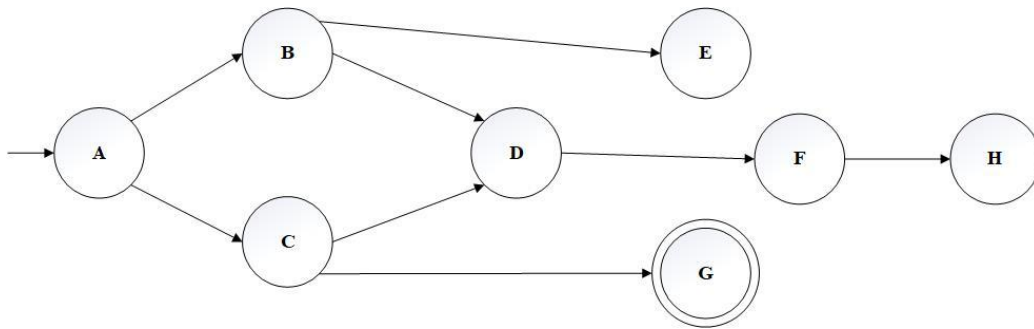
	Marks	[CO#]	[PO#]
3. a. Write down the algorithm for Breadth first search. What are the properties of it?	5	1	2
b. Compare between Breadth first search and Depth first search based on - time complexity, space complexity, optimality and completeness.	5	1	3
(OR)			
c. Write the algorithm for Hill Climbing and what are the conditions where hill climbing algorithm fails.	5	3	1
d. Find the optimal cost required to reach to the goal node.	5	1	4



4. a. Write down the pseudo code for Alpha-Beta pruning? On what basis does the efficiency of Alpha-Beta procedure depend.	5	2	1
--	---	---	---

b. Consider the following graph.

5 2 4



Starting from state A, execute DFS. The goal node is G. Show the order in which the nodes are expanded. Assume that the alphabetically smaller node is expanded first to break ties.

(OR)

c. Prove the completeness of A*.

5 2 2

d. Write the Algorithm for Graph search.

5 1 2

5. a. What are the features of meta-heuristics method?

5 3 1

b. Differentiate between heuristics and meta heuristics based on – nature, type and nature of solution with an example.

5 3 4

(OR)

c. Explain the steps of Genetic Algorithm?

5 3 2

d. Explain the steps of Tabu Search?

5 3 2

6. a. Describe the algorithm of Particle Swarm Optimization?

5 3 3

b. Describe the algorithm for Ant Colony Optimization?

5 3 3

(OR)

c. What do you mean by knowledge-based agents? Write the different techniques for knowledge representation?

5 4 2

d. What is Quantifier in First Order Logic? Elaborate the types of Quantifiers.

5 4 3

--- End of Paper ---