VIT
Vellore Institute of Technology
CHENNAI

Reg. Number: 5354

Continuous Assessment Test (CAT) – I - FEB 2024

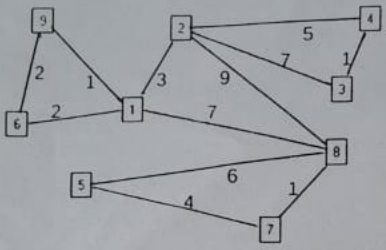
Programme	:	B. Tech (CSE with Specialization)	Semester	:	Winter 23-24
Course Code & Course Title	:	BCSE306L, Artificial Intelligence	Class Number	:	CH2023240501385, 1391, 1415, 1417, 1419, 1397, 1421, 1400, 1402, 1405, 1407, 2474, 2494
Faculty	:	Dr. Vergin Raja Sarobin M, Dr. Vijayalakshmi, Dr. Vedhapriyavadhana, Dr. Tamilarasi, Dr. Abirami S, Dr. Krithiga R, Dr. Reena Roy, Dr. Vijayaprabakaran, Dr. Christopher Columbus, Dr. Lakshmi Harika, Dr. Poonkodi, Dr. Prem Sankar, Dr. SharmilaDevi	Slot	:	C1 + TC1
Duration	:	1½ Hours	Max. Mark		50

General Instructions: < Use this space to provide additional information such as graph sheet, data book etc >

- Write only your registration number on the question paper in the box provided and do not write other information.
- Use statistical tables supplied from the exam cell as necessary
- Use graph sheets supplied from the exam cell as necessary
- Only non-programmable calculator without storage is permitted

Answer all questions

Q. No	Sub Sec.	Description	Marks
1	i)	List the various disciplines that contributed ideas, viewpoints and techniques for the emergence of AI. With a neat timeline illustration, describe the tremendous improvement in the AI's growth right from the possible mathematical model of biological neuron. (8 Marks)	10
	ii)	Can we allow a self-governing robot society to co-exist with us? Defend on this. (2 Marks)	
2	i)	Imagine that you have been appointed to the position of AI scientist at the Department of Defence. You are responsible for developing an agent program that will determine the route of a vehicle used to attack enemies during a war. Describe in detail the PEAS description of the given agent. (7 Marks)	15
	ii)	Suggest a suitable intelligent agent type to develop the above application and justify your answer with a neat diagram. (8 Marks)	
3		Consider the graph with node #7 is the initial state and node #4 is the goal state.	10

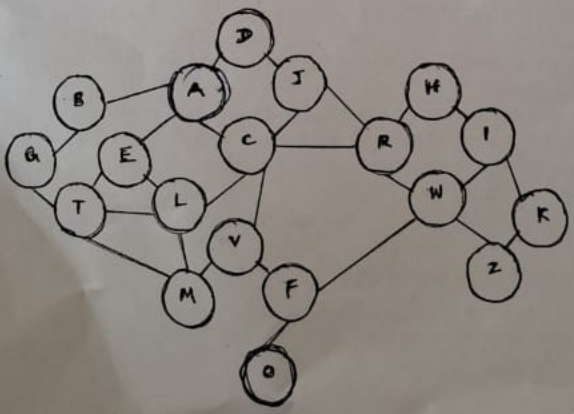


Heuristics:
Node 1 = 6
Node 2 = 4
Node 3 = 1
Node 4 = 0
Node 5 = 14
Node 6 = 10
Node 7 = 15
Node 8 = 15
Node 9 = 10

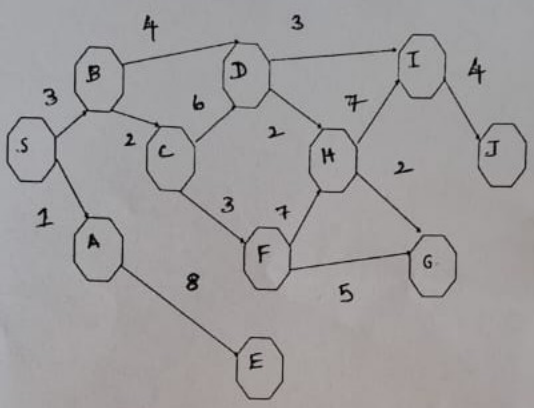
i) Apply the informed search algorithm where the evaluation function is strictly equal to the heuristic function, and discarding the edge weights in a weighted graph. Write down the order in which the nodes are expanded and also write down the path which is returned by this algorithm. (5 Marks)

ii) Check whether this algorithm returns the optimal path or not. Justify your answer why this algorithm returns the optimal solution or not. (5 Marks)

4 i) Apply a Blind search technique in the given search tree, which will not get trapped exploring a blind alley while creating the node list considering 'A' as the start node and 'O' as the goal node. Also justify how it finds the minimal guaranteed solution. (8 Marks). 15



A Trek Ride Camp in Chennai has planned a race for all pro bike

	ii)	peddlers. In order to finish the race on time they gave a map showing many traffic less routes to all cyclists. The task assigned to you is to find the optimal path with the lowest cumulative cost from the source node to the goal node. S-->Source Node and G-->Goal Node. (7 Marks).  	

**********All the best **********