CT2 QP-SET 2-B (1)-Ans key

Artificial Intelligence (SRM Institute of Science and Technology)

SRM Institute of Science and Technology
Faculty of Engineering and Technology
School of Computing
SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu
Academic Year: 2021-2022 (EVEN)
REG.NO

Test: CLA T2 **Date: 31-03-2022**
Course Code & Title: 18CSC305J & Artificial Intelligence
Duration: 2 Periods
Year & Sem: III &VI **Max. Marks: 50**

Course Articulation Matrix:

S.No.	Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
1	CO1	M	M	M	M	H				M	L		H
2	CO2	M	H	H	H	H				M	L		H
3	CO3	M	H	H	M	H				M	L		H
4	CO4	M	H	M	H	H				M	L		H
5	CO5	M	H	H	H	H				M	L		H
6	CO6.	L	H	M	M	H				H	L		H

Part - A
(20 x 1 = 20 Marks)
Instructions: Answer all

Q. No	Question	Marks	BL	CO	PO	PI Code
1	What is UNIFY(Knows(John, x), Knows(x, Elizabeth)) a. **Fail** b. True c. John d.Elizabeth	1	2	3	2	2.2.3
2	The _____ is required to make use of the knowledge embedded in the knowledge base. a. Declarations b. Assertions c. **Control information** d. Rules	**1**	**1**	**3**	**1**	1.3.1
3	The resolution of clauses (¬ P ∨ Q) and (¬ Q∨ R) can be written as a. **(¬ P ∨ Q), (¬ Q∨ R) / (¬ P ∨ R)** b. (¬ P ∨ Q), (¬ Q∨ R) / (¬ P ∧ R) c. (¬ P ∨ Q) / (Q∨ R) d. (¬ P ∨ Q) → (¬ P ∨ R)	**1**	**2**	**3**	**2**	2.2.3
4	Identify the Rules of inference for the following	**1**	**2**	**3**	**1**	1.

	statement: ***If "cats meow and hiss" is true, then "cats meow" is also true.*** a. Addition b. **Simplification** c. Disjunction d. Resolution					3.1
5	Rule pattern matching algorithm is used in_____ a. MYCIN b. **RETE** c. PROLOG d. ELIZA	**1**	**1**	**3**	**1**	1.3.1
6	_____ is a kind of inferencing mechanism used in semantic nets, that is based on joint points between concepts and their relationships a. Symbolism b. Inheritance c.**Intersection** d. Partitioning	**1**	**1**	**3**	**1**	1.3.1
7	Identify the Rules of inference for the following statement: ***If the statements "it is cold or raining" and "it is not cold or it is snowing" are true, then it is raining or snowing*** a. Addition b. **Simplification** c., Disjunction d.Resolution	**1**	**2**	**3**	**2**	2.2.3
8	Semantic nets are very much useful to represent _____ knowledge a. Inference b. **Inheritance** c. Symbolism d. Procedural	**1**	**1**	**3**	**1**	1.3.1
9	Frames are used to represent the _____ model of a stereotypical situation like shopping in a market. a. **Mental** b. Physical c.Static d. Dynamic	**1**	**1**	**3**	**1**	1.3.1
10	Which best justifies Knowledge? a. **It is a known information** b. It is used for inferring c. It is a set of reasoning system d. It is set of assumptions	**1**	**2**	**3**	**1**	1.3.1
11	Which search uses the problem specific knowledge beyond the definition of the problem? a) Depth Limited search b) Depth-first search c) Breadth-first search d) **Best-first search**	1	2	2	2	2.2.3
12	Which of the following is the evaluation function in the A* technique? **a)** Heuristic function **b)** Path cost from the start node to the current node **c)** **Path cost from the start node to current node + Heuristic cost**	1	1	2	2	2.2.3

	d) Average of Path cost from the start node to the current node and Heuristic					
13	One of the main drawbacks of hill-climbing search is__ a) **Terminates at local optimum & does not find optimum solution** b) Terminates at global optimum & does not find optimum solution c) Does not find optimum solution & fail to find a solution d) Fail to find a solution	1	1	2	2	2.2.3
14	Though local search algorithms are not systematic, key advantages would include _____ a) Less memory b) More time c) Finds a solution in large infinite space d) **Less memory & Finds a solution in large infinite space**	1	2	2	1	1.3.1
15	_____ algorithm keeps track of k states rather than just one a) Hill-Climbing search b)**Local Beam search** c) Stochastic hill-climbing search d) Random restart hill-climbing search	1	1	2	2	2.2.3
16	Which of the following are the two key characteristics of the Genetic Algorithm? **a) Crossover techniques and Fitness function** **b)** Random mutation and Crossover techniques **c)** Random mutation and Individuals among the population **d)** Random mutation and Fitness function	1	2	2	1	1.3.1
17	Depth-first search is implemented in recursion with ___data structure a)**LIFO** b)LILO c)FIFO d)FILO	1	1	2	2	2.2.3
18	Which search is similar to minimax search? a) Hill-climbing search b) **Depth-first search** c) Breadth-first search d) Best first search	1	2	2	2	2.2.3
19	Which value is assigned to alpha and beta in the alpha-beta pruning? a) Alpha = max b) Beta = min c) Both Alpha = min & Beta = max d) **Both Alpha = max & Beta = min**	1	1	2	1	1.3.1

20	How many players will play in a Zero-sum game? a. Single player b. Two playesr c.Three players d.**Multiplayers**	1	1	2	1	1.3.1

REG.NO

Test: CLA T 2 **Date: 31-03-2022**
Course Code & Title: 18CSC305J & Artificial Intelligence
Duration: 2 Periods
Year & Sem: III &VI **Max. Marks: 50**

Part – B
(4 x 5 = 20 Marks)

21	Is it possible to relate any of the searching techniques in a case when any Bluetooth enabled device is looking for the other Bluetooth enabled devices? Justify your answer. **Ans:** Yes , it's Possible Each Node act as an advertiser and scanner alternatively to find neighboring nodes. After that, source node sends a route request message to its master to find the destination. If the master does not know the destination in the above list, then the master starts to deliver the request message to any slave in its piconet using a breadth first search	5	2	2	2	2.4.1
22	Find the shortest path using A* Algorithm and list the order of the obstacles from the Initial State(dog) to the Goal State(Bone) Pole G=3.5 H=6 | Rope G=3.8 H=5 | **Bone** H=0 G=3 **F=3**	5	3	2	2	2.4.1

	<table><tr><td>Stand G=6 **F=11** H=5</td><td>Pebbles G=4 **F=12** H=8</td><td>Horn G=3 **F=8.8** H=5.5</td></tr><tr><td>Stick G=2 F=8 H=6</td><td>Restricted Lane G=1 H=6 **F=7**</td><td>Hurdles G=1 **F=7.5** H=6.5</td></tr><tr><td>**Dog**</td><td>~~Blocked~~</td><td>Garden G=5 H=9 **F=14**</td></tr></table> **Ans:** Dog->RestrictedLane->Hurdle(Backtrack) ->Horn ->Bone **Dog->RestrictedLane->Horn->Bone-3 Marks** **F=18.8—----------2 Marks**					
23	Differentiate Forward and Backward Reasoning **Ans:** <table><tr><th>Basic</th><th>Data-driven</th><th>Goal driven</th></tr><tr><td>Begins with</td><td>New Data</td><td>Uncertain conclusion</td></tr><tr><td>Objective is to find the</td><td>Conclusion that must follow</td><td>Facts to support the conclusions</td></tr><tr><td>Type of approach</td><td>Opportunistic</td><td>Conservative</td></tr><tr><td>Flow</td><td>Incipient to consequence</td><td>Consequence to incipient</td></tr></table>	**5**	**2**	**3**	**1**	1.3.1
24	Use the following facts and prove the goal: You are not swimming (1) If you go swimming you will get wet.	**5**	**4**	**3**	**2**	2.4.1

(2) If it is raining and you are outside then you will get wet.
(3) If it is warm and there is no rain then it is a pleasant day.
(4) You are not wet.
(5) You are outside.
(6) It is a warm day.

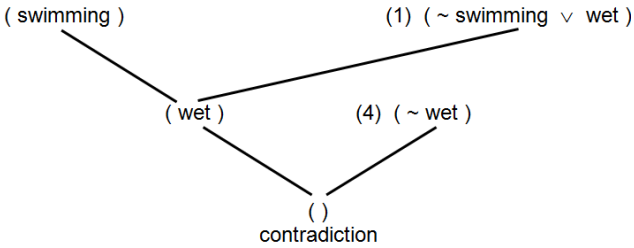
Use the following facts and prove the goal: You are not swimming

(1) If you go swimming you will get wet.
(2) If it is raining and you are outside then you will get wet.
(3) If it is warm and there is no rain then it is a pleasant day.
(4) You are not wet.
(5) You are outside.
(6) It is a warm day.

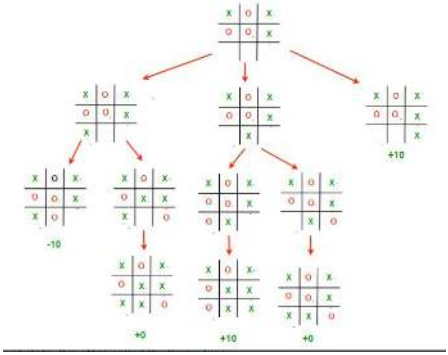
Ans:
Step 1: Propositional Logic [1]

- (1) swimming ⇒ wet
- (2) (rain ∧ outside) ⇒ wet
- (3) (warm ∧ ~ rain) ⇒ pleasant
- (4) ~ wet
- (5) outside
- (6) warm

Step 2: CNF [2]

	• (1) (~ swimming ∨ wet) ∧ • (2) (~ rain ∨ ~ outside ∨ wet) ∧ • (3) (~ warm ∨ rain ∨ pleasant) ∧ • (4) (~ wet) ∧ • (5) (outside) ∧ • (6) (warm) Step 3: Resolution [2] Prove: ~ swimming Assume: swimming  					

Part – C (1 x 10 = 10 Marks)						
25	Derive the working principle of mini max approach with a suitable state space tree for tic tac toe problem. **Ans:**	10	2	3	1	1.3.1

						
26	Describe Dempster Shafer theory with an Exampee **Ans:** Concept : 6 Example : 4	10	3	2	1	1.3.1