

1 2 3 4 5 6 7 8 9 10 11 12 13

**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**CONTINUOUS LEARNING ASSESSMENT-II**  
**: 18CSC305J-Artificial Intelligence** Set  
**: III Year / VI Sem/ B.Tech (CSE, AIML, IOT, BDA, CS)**

Sub Code/Name :  
 Class :  
 Date :  
 Max Marks : 50

**PART A(10x1=10)**  
**ANSWER ALL THE QUESTIONS**

Q.No.	Question	Marks	CO	BI
1	<p>Choose the data structure used in standard implementation of Breadth First Search is?</p> <p>a) Stack          b) Queue          c) Linked List          d) Tree</p>	1	2	1
2	<p>A person wants to visit some places. He starts from a vertex and then wants to visit every place connected to this vertex and so on. What algorithm he should use?</p> <p>a) Depth First Search          b) Breadth First Search          c) Trim's algorithm          d) Kruskal's algorithm</p> <p>What is the space complexity of Depth-first search? where b is the branching factor and m is the maximum depth of the search tree.</p>	1	2	1
				1.2.1

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**ANSWER ALL THE QUESTIONS****Question**

Choose the data structure used in standard implementation of Breadth First Search is?

- a) Stack
- b) Queue
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**Marks****C**

1

2

A person wants to visit some places. He starts from a vertex and then wants to visit every place connected to this vertex and so on. What algorithm he should use?

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1

2

1

What is the space complexity of Depth-first search? where b is the branching factor and m is the maximum depth of the search tree.

- a)  $O(b)$
- b)  $O(b^l)$
- c)  $O(m)$
- d)  $O(bm)$

1

2

1

1.2

Which search implements stack operation for searching the states?

- a) Depth-limited search
- b) Depth-first search
- c) Breadth-first search
- d) Best-first search

1

2

1

2.2.3

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4	d) O(bm) Which search implements stack operation for searching the states? a) Depth-limited search b) Depth-first search c) Breadth-first search d) Best-first search	1	2									
5	Which is used to compute the truth of any sentence? a) Semantics of propositional logic b) Alpha-beta pruning c) First-order logic d) Semantic net	1	2	1	3	2	1					
6	Translate the following statement into FOL. "For every a, if a is a philosopher, then a is a scholar" a) $\forall a \text{ philosopher}(a) \text{ scholar}(a)$ b) $\exists a \text{ philosopher}(a) \text{ scholar}(a)$ c) $\exists a \text{ philosopher}(a) \text{ scholar}(a)$	1	3	2	1	3	2	1	3	2	1	

- b)  $\exists a \text{ philosopher}(a) \text{ scholar}(a)$   
c)  $\exists a \text{ philosopher}(a) \text{ scholar}(a)$

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	b) $\exists$ a philosopher(a) scholar(a)	1	1	1.1
	c) $\exists$ a philosopher(a) scholar(a)			
	d) $\forall$ a philosopher(a) $\exists$ scholar(a)			
7	Which system is used to demonstrate, on a purely syntactic basis, that one formula is a logical consequence of another formula.	1	3	
	a) Deductive Systems			
	b) Inductive Systems			
	c) Reasoning with Knowledge Based Systems			
	d) Search Based Systems			
8	The adjective "first-order" distinguishes first-order logic from _____ in which there are predicates having predicates or functions as arguments are permitted.	1	3	2
	a) Representational Verification			
	b) Representational Adequacy			
	c) Higher Order Logic			
	d) Inferential Efficiency			
9	Show the representation of Fuzzy logic	1	3	2
	a) IF-THEN-ELSE rules			
	b) IF-THEN rules			
	c) IF-ELSE rules			
	d) IF KB=rule1 & rule2			
10	Infer the following algorithm learns from more complex environments to generalize, approximate and simplify solution logic.	1	3	1.2.1
	a) Fuzzy Relational DB			
	b) Ecorithms			
	c) Fuzzy Sat			

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		1	2	3	4	5	6	7	8	9	10	11	12	13	14
10		<p>environments to generalize, approximate and simplify solution logic.</p> <p>a) Fuzzy Relational DB  b) Ecorithms  c) Fuzzy Set  d) Ontology set</p>													
<b>PART-B(4x4=16)</b> <b>ANSWER ANY FOUR QUESTIONS</b>															
Q.No.	Question	Marks	CO	BL											
11.	Write the heuristic estimation function for A* search.	4	2	1	1										
12.	Identify the termination condition for the Hill-Climbing algorithm.	4	2	1	1.3										
13.	Explain the min-max algorithm for the given example and find the optimal path for MIN to win the game	4	2	2	2.1.1										

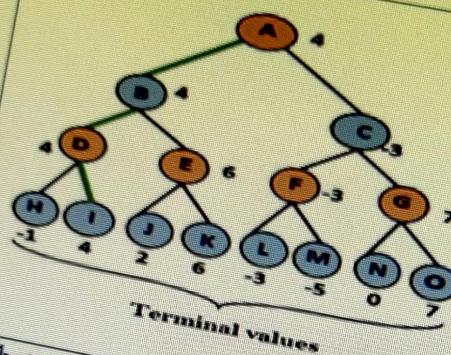


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14. What are the facts are used to represent the propositional and predicate logic give with an example.

Construct first order logic for the following English statements to statements in first order logic:

- Every boy or girl is a child
- Every child gets a doll or a train or a lump of coal

15. Identify objects, properties, functions and relations for the given example.  
"EVIL KING JOHN BROTHER OF RICHARD RULED ENGLAND IN 1200"

16.

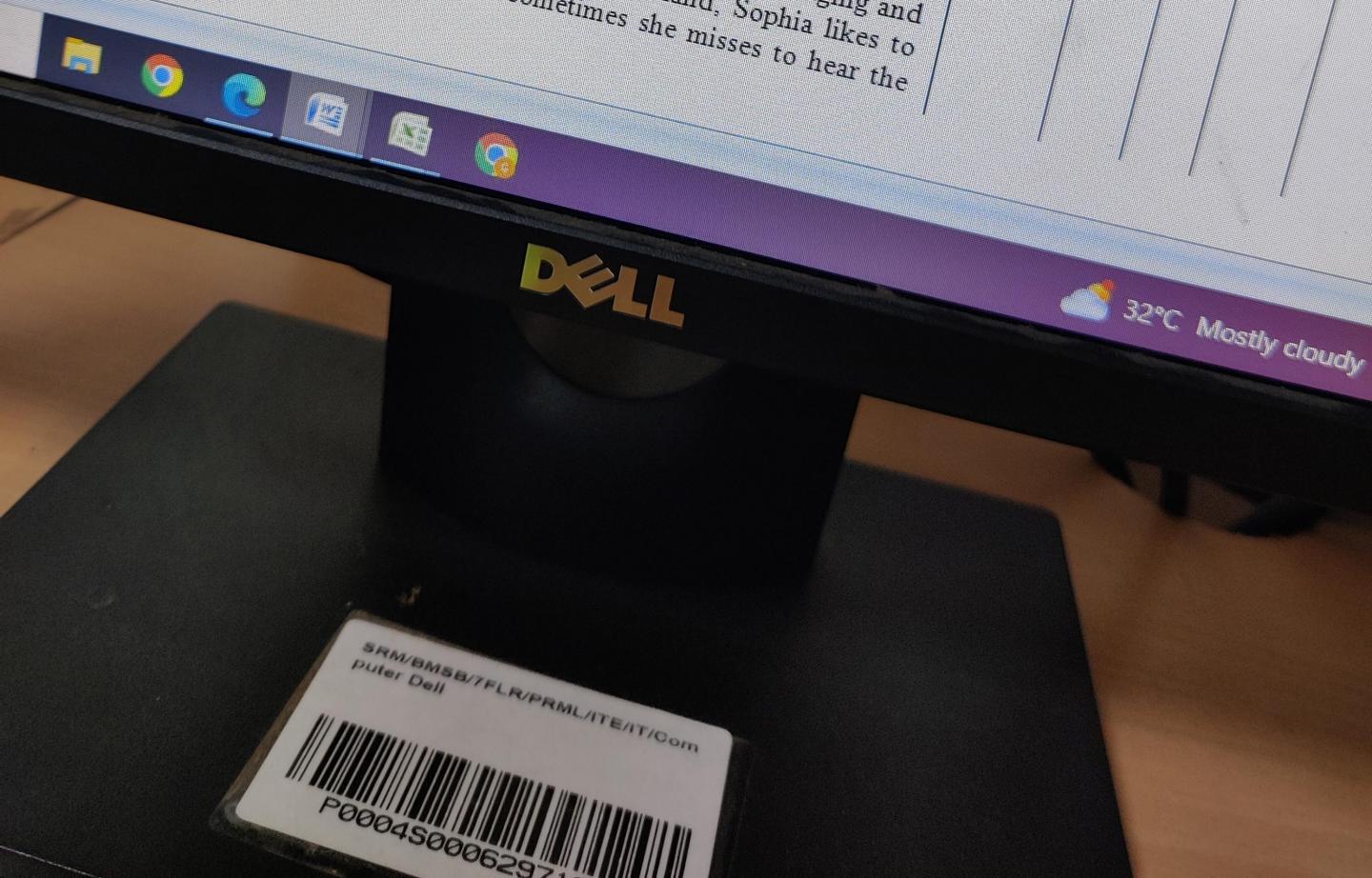
PART-C(2x12= 24)



5 6 7 8 9 10 11 12 13 14

**PART-C(2x12= 24)**  
**ANSWER ALL THE QUESTIONS**

Q.No.	Question	Marks	CO	BL
17.	<p>a.) Construct the State Space diagram for Hill Climbing search problem. Identify the problems in different regions in Hill climbing and give reason.</p> <p>(OR)</p> <p>b.) Solve the following crypt arithmetic problem using Constraint satisfaction problem. TWO+TWO=FOUR and write the production rule for solving this problem</p>	12	2	2
18.	<p>a.) Explain Uncertain Knowledge and reasoning Methods. Bayesian probability and belief network the forward chaining algorithm work for the following problem:</p> <p>Harry installed a new burglar alarm at his home to detect burglary. The alarm reliably responds at detecting a burglary but also responds for minor earthquakes. Harry has two neighbors David and Sophia, who have taken a responsibility to inform Harry at work when they hear the alarm. David always calls Harry when he hears the alarm, but sometimes he got confused with the phone ringing and calls at that time too. On the other hand, Sophia likes to listen to high music, so sometimes she misses to hear the</p>	12	3	2 2.1.1



alarm. Here we would like to compute the probability of Burglary Alarm.

(OR)

b.) Identify the use of predicate logic as a way of representing knowledge by looking at a specific example and prove that Marcus hate Caesar by Consider the following set of sentence for converting in to CNF.

1. Marcus was a man.
2. Marcus was a Pompeian.
3. All Pompeians were Romans.
4. Caesar was a ruler.
5. All Pompeians were either loyal to Caesar or hated him.
6. Every one is loyal to someone.
7. People only try to assassinate rulers they are not loyal to.
8. Marcus tried to assassinate Caesar.

12

3

3

1.2.1

#### Outcome Alignment Matrix:

QUESTION NUMBER	CO distribution				
	CO1	CO2	CO3	CO4	CO5
1			1		
2			1		

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