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TERM END EXAMINATIONS (TEE) – December 2021- January 2022

Programme	: B. Tech	Semester	: Fall 2021-22
Course Name	: Fundamentals in AI & ML	Course Code	: CSA2001
Faculty Name	: Dr. Mahendra Pratap Yadav	Slot / Class No	: A11+A12+A13/BL20 21221000050
Time	: 1½ hours	Max. Marks	: 50

Answer ALL the Questions

Q. No.	Question Description	Marks
PART - A (30 Marks)		
1	(a) Define the Artificial Intelligence. Discuss the history of AI. Explain the types of Artificial Intelligence based on their functionality in details.	10
	OR	
	(b) Explain the various properties of the search algorithm. Discuss the concept of uninformed search. Explain the Breadth-first search (BFS) approach in details along with pseudocode and properties.	10
2	(a) Explain the concept of forward chaining along with their properties. Discuss the advantage and disadvantage of forward chaining. Apply the forward chaining approach on following example and Prove that Amit likes peanuts. <ul style="list-style-type: none"> • Amit likes all kind of food. • Apple is food • Chicken is food • Anyone eats anything and alive is food. • Rahul eats peanuts and still alive • Yash eats everything that Rahul eats. 	10
	OR	
	(b) Discuss the concept of Resolution in First Order Logic (FOL). Discuss the various steps that can use for resolution. Apply resolution over the following example <ul style="list-style-type: none"> • Ayush likes all kind of food. • Apple and vegetable are food • Anything anyone eats and not killed is food. • Anil eats peanuts and still alive • Raghav eats everything that Anil eats. and Prove by resolution that: <ul style="list-style-type: none"> • Ayush likes peanuts. 	10

3 (a) Explain the Concept Learning as Search approach. Discuss the concept of **More-General-Than** relation. Explain the S-FIND algorithm with the help of following example.

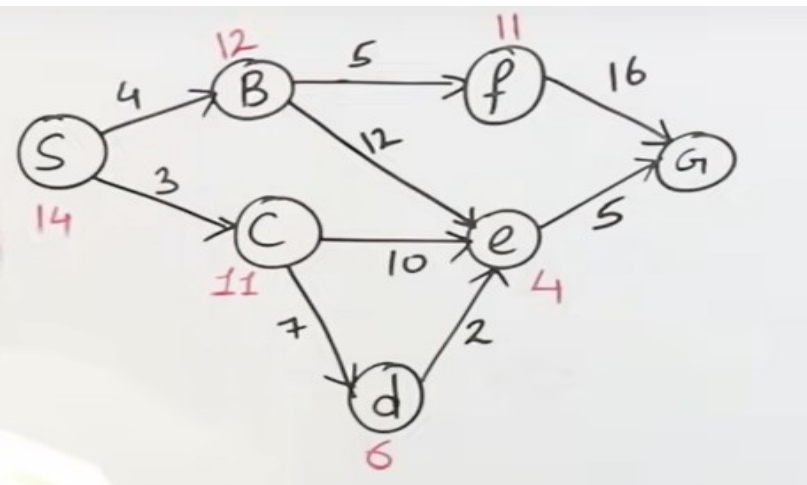
Time	Weather	Temperature	Company	Humidity	Wind	Goes
Morning	Sunny	Warm	Yes	Mild	Strong	Yes
Evening	Rainy	Cold	No	Mild	Normal	No
Morning	Sunny	Moderate	Yes	Normal	Normal	Yes
Evening	Sunny	Cold	Yes	High	Strong	Yes

OR

(b) What is Prolog? What are the different areas where we use the Prolog programming? Explain it in details. Discuss the difference between the Logic programming and the traditional functional programming languages concept.

PART - B (20 Marks)

4 Discuss the concept of informed search. Explain with the example to prove that A* is admissible. Find the most cost-effective path to reach from start state S to final state G using A* Algorithm.



5 Discuss the Candidate Elimination Algorithm. Explain the concept of Consistent Hypothesis. Apply the Candidate Elimination Algorithm on the following example.

Example	Shape	Size	Color	Surface	Thickness	Target Concept
1	Circular	Large	Light	Smooth	Thick	Malignant (+)
2	Circular	Large	Light	Irregular	Thick	Malignant (+)
3	Oval	Large	Dark	Smooth	Thin	Benign (-)
4	Oval	Large	Light	Irregular	Thick	Malignant (+)

