CBCS SCHEME

USN | | | | | | | | | |

17CS562

Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025
Artificial Intelligence

Time: 3 hrs. Max. Marks: 100

Note: *Answer FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain the components and categories of production system. List the requirement of good control strategies. **(10 Marks)**

b. Explain steepest Hill Climbing technique with an algorithm. Comment on its drawbacks and how to overcome these drawbacks. **(10 Marks)**

OR

2 a. Consider trying to solve the 8-puzzle instance given below using Hill Climbing. Apply any heuristic function appropriate to solve the problem. **(10 Marks)**

Start state

2	8	3
1		4
7	6	5

End state

1	2	3
8		4
7	6	5

b. List and explain the problem characteristics which must be analyzed before deciding on a proper heuristic search. **(10 Marks)**

Module-2

3 a. Consider the following sentences:

- John likes all kinds of food.
- Apples are food.
- Anything anyone eats and isn't killed by is food.
- Bill eats peanuts and is still alive.
- Sue eats everything Bill eats.

(i) Translate all the sentences into formulas in predicate logic.
(ii) Convert formulas from previous step into clause form.
(iii) Prove that John likes peanuts using resolution. **(12 Marks)**

b. Differentiate between forward and backward reasoning and list the factors that influences the choice between them. **(08 Marks)**

OR

4 a. Define CNF. Give an algorithm for converting given proposions to CNF. **(10 Marks)**

b. Explain the different approaches used for knowledge representation and list the qualities a good knowledge representation system should possess. **(10 Marks)**

Module-3

5 a. Propose implementation of DFS and BFS in the context of reasoning. **(10 Marks)**

b. Explain Bayesian Networks. **(10 Marks)**

OR

6 a. Explain certainity factors and rule based system in statistical reasoning. **(10 Marks)**

b. Explain property inheritance algorithm for frames. **(10 Marks)**

Module-4

7	a.	Explain CYC.	**(10 Marks)**
	b.	Explain conceptual Dependency along with its goals and representation.	**(10 Marks)**

OR

8	a.	Write the algorithm for minimax (position, depth, players) and explain.	**(10 Marks)**
	b.	Write a note on global ontology.	**(10 Marks)**

Module-5

9	a.	Define learning. Explain with examples.	**(07 Marks)**
	b.	Explain rote learning.	**(06 Marks)**
	c.	Write a note on knowledge acquisition.	**(07 Marks)**

OR

10	a.	Explain how decision trees are used in learning.	**(07 Marks)**
	b.	What capabilities are expected from expert systems?	**(06 Marks)**
	c.	Write the algorithm for candidate elimination.	**(07 Marks)**

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