22MCA3C10L

M.C.A. III Semester Degree Examination, April/May - 2024
ARTIFICIAL INTELLIGENCE
(NEP)

Time : 3 Hours   Maximum Marks : 70

Note : Answer **any five** of the following questions with question **No.1** is **Compulsory**.

1. (a) Define a Production System in the context of Artificial Intelligence, outlining its structure, components, and operation in problem-solving environments. **7**

(b) Explain the A* algorithm, detailing its heuristic-based approach to search optimization, and provide a scenario where A* is applicable and effective in solving a problem, such as pathfinding in a maze or navigation system **7**

2. (a) Describe the process of mapping between facts and representations in problem-solving tasks, providing an example. **7**

(b) How AI agent will solve the 8 puzzle game using Heuristics techniques ? **7**

1	5	8
3	2	
4	6	7

3. (a) Compare and contrast procedural knowledge and declarative knowledge, highlighting their distinct characteristics and roles in knowledge representation. **7**

(b) Explain the concept of "Matching" in rule-based systems, and discuss various approaches proposed for matching. **7**

4. (a) Illustrate semantic networks using a relevant example, explaining how nodes and arcs represent concepts and relationships. **7**

(b) Describe the Minimax Procedure along with an illustrative example. **7**

5. (a) Describe techniques for spell checking, including dictionary-based methods, phonetic algorithms, and statistical approaches. **7**

(b) Examine the significance of pragmatics in natural language processing, providing diverse examples. **7**

6. (a) Provide an illustration of the Best First Search algorithm, including its heuristic-based approach to search optimization. **7**

(b) Compare and contrast forward reasoning and backward reasoning techniques. **7**

7. (a) Provide a demonstration of the simplified frame system with a practical example. **7**

(b) Explore syntactic processing techniques utilized for analyzing the grammatical structure of sentences, such as parsing algorithms. **7**

8. Write a short notes on the following :
(a) DFS **5**
(b) Challenges with respect to AI **5**
(c) Production system characteristics **4**

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