

M.Sc. Sem-1 (AIML & AIML-Defence Specific) Examination**Introduction to Artificial Intelligence****Time : 3-00 Hours]****March 2022****[Max. Marks : 100****Instructions:**

1. Figures to the right indicate full marks
2. Each section should be written in a separate answer book
3. Be precise and to the point in your answer

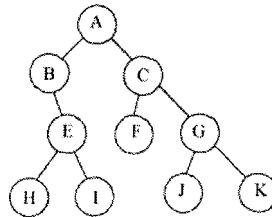
SECTION-I

1. **Answer the following questions to the point: (Any Ten)** [20]

- i. Write 2 definitions of Artificial Intelligence.
- ii. Define: Rational Agent
- iii. Show a sample State Space representation of 8 puzzle problem.
- iv. Differentiate between: Procedural and Declarative knowledge.
- v. What role does Heuristics play in Searching?
- vi. List the Task Domains of Artificial Intelligence.
- vii. Why is Generate and Test known as Blind Search Method?
- viii. Explain Local Maxima.
- ix. Draw the setup of Turing Test.
- x. Give example of an Intelligent Agent with Episodic environment.
- xi. Write one point of difference between Monotonic and Non-monotonic Production Systems.

2. **Do as directed: (Any 4)** [20]

- i. Traverse the following tree with initial node A and goal node I using Breadth First Search.



- ii. Represent the sentence using Semantic Nets.
 - John watched a comedy movie with Lee in multiplex.
- iii. Represent the sentence using Conceptual Dependency.
 - Pony will eat salad with a fork.
- iv. Evaluate 7-Problem Characteristics of Tower of Hanoi Problem.
- v. What do you understand by PEAS? Write PEAS description for an Automated Traffic Controller.

3. **Consider the following sentences:** [10]

1. Everyone who loves all animals is loved by someone.
 2. Nobody loves those who kill an animal.
 3. Ben loves all animals.
 4. Either Ben or Andy killed Pussy.
 5. Andy is friend of Ketty.
 6. Pussy is a white little cat of Ketty.
- a) Translate these sentences into formulas in predicate logic.
 - b) Find "Did Ben kill Pussy?" using Backward Chaining.

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SECTION-II

4. **Answer the following questions in detail (Any Five):** **[50]**
- i. Explain any one real-time Expert System of your choice.
 - ii. Distinguish between forward and backward chaining with appropriate examples.
 - iii. Explain A* Algorithm with the help of an example.
 - iv. Why do you think Uncertainty exist in real world? Support your answer with Belief Theory.
 - v. Explain Alpha beta Pruning method with the help of an example.
 - vi. What are Expert Systems? Where are they used? Explain each component of Expert system.
