Seat No. : _____

DB-109

December-2025

M.Sc. (CA & IT), Sem.-VII

Artificial Intelligence

Time : 2:30 Hours] **[Max. Marks : 70**

1. Answer the following questions :
   (1) Discuss different problem characteristics of AI. **5**
   (2) Explain in detail Turing Test in AI and Chinese Room Argument. **5**
   (3) Solve the following Eight Tile Puzzle Problem. **4**

2	8	3
1	6	4
7		5

Start State

	2	3
1	8	4
7	6	5

Goal State

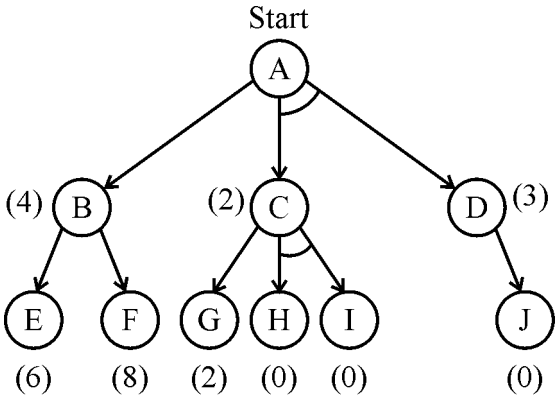
OR

   (3) Explain in detail production systems of AI. **4**

2. Answer the following questions :
   (1) Explain Best First Search Algorithm with example. Discuss algorithm steps for best first search. **5**

OR

   (1) Discuss in detail Local and Global Heuristic Search Techniques. **5**
   (2) Explain in detail Steepest-Ascent and Stochastic Hill Climbing. **5**
   (3) Fin the lowest cost of path start node to goal node using AO* Graph. The cost of each edge is the same as 1. **4**



3. Answer the following questions :

(1) Explain in detail Forward and Backward Reasoning in knowledge representation. **5**

OR

(1) Explain different Components of Expert System with a suitable diagram. **5**

(2) Discuss different types of expert system. **5**

(3) Differentiate Procedural and Declarative Knowledge. **4**

4. Answer the following questions :

(1) Explain different Connective Symbols in Propositional Logic with example. **5**

OR

(1) Differentiate between propositional logic and predicate logic on the basis of : **5**

(a) Structure

(b) Application

(c) Expressiveness

Provide example in your explanation.

(2) Discuss Computable function and predicates with suitable example. **5**

(3) Represent the following English statement in predicate logic. **4**

(a) All humans are mortal.

(b) Some birds cannot fly.

(c) Every teacher teaches at least one course.

(d) Everyone loves someone.

5. Answer the following questions :

(1) Explain in detail Alpha-Beta Pruning with example. **5**

OR

(1) Explain weak slot and filler structures with an appropriate example. **5**

(2) Write short notes on :

(a) Partitioned sematic networks **3**

(b) Intersection search **2**

(3) Construct a sematic network for the following knowledge base : **4**

(a) A sparrow is a bird.

(b) Birds can fly.

(c) Penguins are birds.

(d) Penguins cannot fly.

(e) Sam is a penguin.