**SardarVallabhbhai Patel Institute of Technology**

**INFORMATION TECHNOLOGY**

**Artificial Intelligence(2180703)**

**Assignment 1**

**Unit I**

1. Enlist AI techniques. And explain in brief.
2. Explain AI applications.

**Unit II**

1. Show state space of water jug problem.
2. Explain AI problem characteristics
3. Explain breast first search method.
4. Show the state space of the 8-puzzle problem.
5. Explain following hill climbing method with algorithm and example.
   1. Simple hill climbing
   2. Steepest hill climbing
   3. Simulated annealing
6. Write the steps of A\* algorithm. Explain its working.
7. Write steps of AO\* algorithm. Explain its working.
8. Solve the following problems using constraint satisfaction
   1. CROSS+ROADS=DANGER
   2. DONALD+GERALD=ROBERT
   3. SEND+MORE=MONEY
   4. AND+OR=ALL

**Assignment 2**

**Unit III**

1. Explain the mappings between facts and representations.
2. Explain property inheritance algorithm with example.

**Unit IV**

1. Explain steps of unification in predicate logic.
2. Discuss the steps of converting predicate logic wff to clause form
3. Consider the following sentences:

* Raj likes all kinds of food
* Apples are food
* Anything anyone eats and isnot killed by is food.
* Sachin eats peanuts and is still alive
* Vinod eats everything sachin eats

Now attempt following

1. Translate these sentences into predicate logic
2. Use resolution to answer the question “what food does vinod eat?”
3. Given knowledge
4. Robot knows that all of the packages in room no: 27 are smaller than any of the once in room no: 28.
5. A is package.
6. B is package.
7. Package A is either in room no: 27 or room no: 28.
8. B is in room no: 27.
9. Package B is not smaller than package A.

**Prove:**Package A is in room no: 27

1. Convert clause to CNF form.

¬ [((P V ¬Q) → R) → (P Λ R)]

**Unit V**

1. What is horn clause? How it is represented in PROLOG?
2. Compare the representation of facts using Logic and PROLOG.
3. Compare the following
   1. Forward reasoning and Backward reasoning
   2. Declarative and procedural knowledge