unit - I
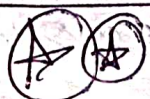
1) Defⁿ of AI :-

AI is concerned with the design of Intelligence in an Artificial Devices.

2) What is Intelligence :-

1) Behave as Intelligence as Human.

2) Behave in the best Possible manner.

AI problems :-

1) **N-Queen's problem** : - N-Queens Problem is to place n-Queens in such a manner on an n × n chessboard that no Queens attack each other by being in the same row, column or diagonal. It can be seen that for n = 1, the problem has a trivial solution, and no solution exists for n = 2 and n = 3.

2) **Tic-Tae-Toe** :- Tic-Tae-Toe is a simple game for two players that we enjoyed playing as kids. The game involves 2 players placing their respective symbols. in a 3 × 3 grid. The player who manages to place three of their symbols in horizontal/ vertical / diagonal row wins the game. If either player fails to do so the game ends draw.

3) **8-Puzzle problem** :- In this puzzle each of the 8 puzzle problem is discussed.

   Given a 3×3 board with 8 tiles

(every tiles has one number (from 1 to 8) and one empty space. The objective is to place the numbers of tiles to match the final configuration using the empty space. We can slide four adjacent (left, right, above and below) tiles into the no empty space.

For example,

Initial configuration

1	2	3
5	6	
7	8	4

Final configuration

1	2	3
5	8	6
	7	4

what is an agent in AI ? what are the
types of agent ? Discuss about environment
for agent ? ✶ ✦

An agent is ~~nothing~~ anything that can
perceive its environment through Sensors
and acts upon that environments
through ~~effectors~~ actuators.

☑ Types of AI agent

1) Simple Reflex Agent.
2) Model-based reflex agent.
3) Goal-based agents.
4) Unity-based agent.

5) Learning agent.

1. Simple Reflex agent:

The Simple reflex agents are the simplest agents. These agents take decisions on the basis of the current percepts and ignore the rest of the percept history.

These agents only succeed in the fully observable environment.

2. Model-based reflex agent

The Model-based agent can work in a partially observable environment, and track the situation.

A model-based agent has two important factors:

Model: It is knowledge about "how things happen in the world," so it is called a Model-based agent.

Internal State: It is a representation of the current state based on percept history.

3. Goal-based agents

The knowledge of the current state environment is not always sufficient to decide for an agent to what to do.

The agent needs to know its goal which describes desirable situations.

Goal-based agents expand the capabilities of the model-based agent by having the "goal" information.

They choose an action, so that they can achieve the goal.

4. Utility-based agents

These agents are similar to the goal-based agent but provide an extra component of utility measurement which makes them different by providing a measure of success at a given state.

Utility-based agent act based not only goals but also the best way to achieve the goal.

5. Learning Agents

A learning agent in AI is the type of agent which can learn from its past experiences, or it has learning capabilities.

It starts to act with basic knowledge and then able to act and adapt automatically through learning.

Environment for an Agent :-

An environment is everything in the world which surrounds the agent, but it is not a part of an agent itself. An environment can be described as a situation in which an agent is present.

The environment is where agent lives, operate and provide the agent with something to sense and act upon it. An environment is mostly said to be non-feministic.

4) what is Rational Agent? (14) (10)

↳ A rational agent could be anything that makes decisions, as a person, firm, machine, or software. It carries out an actions with the best outcomes after ~~consed~~ considering past and current Percepts.

4) what is the Autonomous Agents? ⭐⭐

↳ Autonomous Agents are software entities that are capable of independent action in dynamic, ~~and~~ unpredictable environment. An autonomous agent can learn and adapt to a new environment.