AI Assignment 3

Various Components of AI are as follows:

1. Learning
2. Reasoning
3. Problem Solving
4. Perception
5. Language Understanding

1. Learning

It is the activity of gaining knowledge or skill by studying, practising, being taught, or experiencing something. Learning enhances the awareness of the subjects of the study.

The ability of learning is possessed by humans, some animals, and AI-enabled systems. Learning is categorized as −

* **Auditory Learning** − It is learning by listening and hearing. For example, students listening to recorded audio lectures.
* **Episodic Learning** − To learn by remembering sequences of events that one has witnessed or experienced. This is linear and orderly.
* **Motor Learning** − It is learning by precise movement of muscles. For example, picking objects, Writing, etc.
* **Observational Learning** − To learn by watching and imitating others. For example, child tries to learn by mimicking her parent.
* **Perceptual Learning** − It is learning to recognize stimuli that one has seen before. For example, identifying and classifying objects and situations.
* **Relational Learning** − It involves learning to differentiate among various stimuli on the basis of relational properties, rather than absolute properties. For Example, Adding ‘little less’ salt at the time of cooking potatoes that came up salty last time, when cooked with adding say a tablespoon of salt.
* **Spatial Learning** − It is learning through visual stimuli such as images, colors, maps, etc. For Example, A person can create roadmap in mind before actually following the road.
* **Stimulus-Response Learning** − It is learning to perform a particular behavior when a certain stimulus is present. For example, a dog raises its ear on hearing doorbell.

2. Reasoning

It is the set of processes that enables us to provide basis for judgement, making decisions, and prediction. There are broadly two types –

a. Inductive Reasoning

It conducts specific observations to makes broad general statements. Even if all of the premises are true in a statement, inductive reasoning allows for the conclusion to be false.

Example: "Nita is a teacher. All teachers are studious. Therefore, Nita is studious."

b. Deductive Reasoning

It starts with a general statement and examines the possibilities to reach a specific, logical conclusion. If something is true of a class of things in general, it is also true for all members of that class.

Example: "All women of age above 60 years are grandmothers. Shalini is 65 years. Therefore, Shalini is a grandmother."

3.Problem Solving

It is the process in which one perceives and tries to arrive at a desired solution from a present situation by taking some path, which is blocked by known or unknown hurdles.

Problem solving also includes decision making, which is the process of selecting the best suitable alternative out of multiple alternatives to reach the desired goal are available.

4.Perception

It is the process of acquiring, interpreting, selecting, and organizing sensory information.

Perception presumes sensing. In humans, perception is aided by sensory organs. In the domain of AI, perception mechanism puts the data acquired by the sensors together in a meaningful manner.

5.Language Understanding

It is one’s ability to use, comprehend, speak, and write the verbal and written language. It is important in interpersonal communication.