Department of Computer Applications

INTERNAL ASSESSMENT SHEET

Student Name: G.vishnuvardhan

Roll No: 1325-24-862-223

Section: B

Subject: AI with Python

Assessment: Pre learning

Module: 7

Summary of Knowledge Representation

Knowledge representation is essential in artificial intelligence (AI) to encode information about the world so machines can process, reason, and solve problems effectively. It bridges human cognition and computational capabilities, enabling systems to mimic intelligent behavior. **Need for Knowledge Representation** AI systems require knowledge representation to interpret and process information, solve problems, learn, and make decisions. It provides structure and meaning to rawdata ,facilitating reasoning and inference.

Knowledge Representation Issues Challenges include expressiveness (capturing complex scenarios), efficiency (ensuring computational feasibility), scalability (managing large knowledge bases), dealing with incomplete or uncertain data, and ensuring interoperability among systems. Types of Knowledge Representation**: Logical Representation** Uses formal logic for precision and reasoning, **Semantic Networks** Represents knowledge as concept nodes and relationships, **Frames** Encodes stereo typical situations with attribute-value pairs, **Production Rules** Uses "if-then" rules for decision-making. **Using Predicate Logic** Predicate logic expresses facts and relationships with predicates, variables, and quantifiers, enabling formal reasoning and inference. **Representing Knowledge Using Rules** Rules encode decision-making knowledge as "if-then" statements, widely used in expert systems.

Control Knowledge Guides decision-making by specifying strategies or task execution priorities, complementing declarative knowledge.

Logic Programming paradigm uses logic for problem-solving, as seen in Prolog, leveraging facts and rules for inference.

Department of Computer Applications

Forward and Backward Reasoning Forward Reasoning Starts with facts to derive conclusions (data-driven). **Backward Reasoning** Begins with a goal and works backward to find supporting evidence (goal-driven).

Knowledge representation is the backbone of intelligent systems, enabling machines to reason, learn, and act intelligently.

REFERENCE:

Artificial Intelligence by Saroj Kaushik

Artificial Intelligence by Elaine Rich & Kevin Knight