

**Subject: Artificial Intelligence**

**Course: M.Tech(IT) VIII Semester**

**Session: Jan 2020**

**Note: Study the Given notes and Submit the following Assignment in Soft copy till 25<sup>th</sup> April, 2020**

1. What is an AI Technique? Explain various task domains of AI.
2. Write the problem characteristics used in heuristic search in brief. How it is differ from algorithmic search?
3. Define the heuristic search technique. Explain steepest-ascent hill climbing method with an example.
4. Write the algorithm for breath first search and depth first search.
5. Explain the difference between simple relational knowledge and procedural knowledge with example.
6. Consider the following Axioms.
  - 1) Marcus was a man.
  - 2) Marcus was pompeian.
  - 3) Marcus was born in 1890.
  - 4) All men are mortal.
  - 5) All pompeians died when the volcano erupted in 1905.
  - 6) No mortal lives longer than 150 years.
  - 7) It is now 2015.
  - 8) Alive means not dead.
  - 9) If someone dies, then he is dead at all later times.Convert these facts in predicate logic and CNF form and prove that "Marcus not alive now" using resolution.
7. Write the conversion rules to Conjunctive Normal Form. The following argument support the conclusion that John is wearing a coat.
  1. If it is snowing, it is cold
  2. If it is cold, John is wearing a coat
  3. It is snowingProve it by Resolution Rule of Inference
8. State the role of facts and rules in knowledge representation with examples. Convert following rules in prolog.

- a) A person is happy if he is rich and famous.
- b) Ram likes anyone who likes cricket.
- c) Ram likes anyone who likes themselves.
- d) A hope less person is an unhappy person.
- e) A healthy person eats fruits and drink milk.

9.What is a Knowledge Based System? Draw and Explain its architecture.

10.Show a conceptual dependency representation of following sentences.

- a. John begged Mary for a pencil.
- b. John ate noodles with a folk.

11.Illustrate the use of semantic net in knowledge representation with an example.

12.On the basis of six jobs, your task is to choose the job, that will give you the highest

salary, Given the constraints that the job should be interesting and close to your home,

The fuzzy sets are:

Interest = { ( 1, 0.4 ), ( 2, 0.6 ), ( 3, 0.7 ), ( 4, 0.9 ), ( 5, 0.3 ), ( 6, 0.8 ) }

Drive = { ( 1, 0.1 ), ( 2, 0.9 ), ( 3, 0.6 ), ( 4, 1.0 ), ( 5, 0.2 ), ( 6, 0.3 ) }

Salary = { ( 1, 0.785 ), ( 2, 0.312 ), ( 3, 0.723 ), ( 4, 0.129 ), ( 5, 0.345 ), ( 6, 0.823 ) }

Highest membership shows highest interest, lowest drive and highest salary also

Draw graph.

13.Write the short notes on followings.

- a) Approaches to knowledge representation
- b) Restaurant Script
- c) Fail predicate with example
- d) Production rules for water jug problem

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