

TRIBHUVAN UNIVERSITY
INSTITUTE OF ENGINEERING
Examination Control Division
2080 Baishakh

Exam.	Back		
Level	BE	Full Marks	80
Programme	BEI	Pass Marks	32
Year / Part	IV / I	Time	3 hrs.

Subject: - Artificial Intelligence (CT 710)

- ✓ Candidates are required to give their answers in their own words as far as practicable.
- ✓ Attempt All questions.
- ✓ The figures in the margin indicate Full Marks.
- ✓ Assume suitable data if necessary.



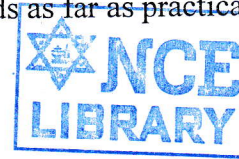
1. What is an intelligent agent? What type of model it works on? Explain PEAS for a Medical Diagnosis System. [2+2+3]
2. What do you understand by constraint satisfaction problem? Solve the following crypto-arithmetic problem. EAT+THAT = APPLE [2+6]
3. What are the problem associated with hill climbing search? Explain how simulated annealing overcome problem associated in hill climbing search. [3+5]
4. Assume the following facts:
 - a) Sita likes all kinds of food.
 - b) Momo and Burger are food.
 - c) Anything anyone eats and isn't killed by is food.
 - d) Bill eats mushroom and is still alive.
 - e) Sue eats everything Bill eats.Prove that "Sita likes mushroom" using resolution refutation method. [8]
5. What is Bayesian network? Describe with an appropriate example. How inference can be done using this network? [5+3]
6. What are the different knowledge representation models? Discuss about semantic nets with an example. [2+5]
7. Discuss the steps involved in genetic algorithm with example. [8]
8. What are the problem associated with NLP? How syntactic morphological and semantic analysis is done during natural language processing? Explain with example. [2+5]
9. What are major characteristics of expert system? Explain with example. Explain a general approaches for developing an expert system with a block diagram. [2+5]
10. Write short notes on: [3×4]
 - a) Fuzzy logic
 - b) Computer vision
 - c) A* Search.

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2079 Bhadra

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Year / Part	IV / I	Time	3 hrs.

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1. What is Turing test? How is can be used to measure intelligence of machine? Explain. [2+5]
2. What are the steps of Problem solving? Assume you are given three empty jugs; a 3 – gallon, a 5-gallon and a 9-gallon, and a pump can fill water only in 3- gallon jug. How you get exactly 7 gallons of water in the 9- gallon jug? Formalize the problems; write down production rules and draw search tree to solve this water Jug problem. [2+1+2+3]
3. Different between Depth first search and Breadth first search with their performance criteria. [7]
4. Prove that "Charlie is a mammal" with given propositions. [8]
 - a) Cows, pigs and horses are mammal
 - b) The child of horse is a horse
 - c) Bluebeard is a horse
 - d) Bluebeard is charlie's father
 - e) Child and father are inverse relation
 - f) Every mammal has a father
5. Differentiate between forward chaining and backward chaining using suitable example. [7]
6. List the issues need to be consider in Knowledge Representation techniques. Convert given sentences into Semantic Network. [2+6]
 - a) Tom is a cat
 - b) Tom fights with rat
 - c) Tom is owned by Ram
 - d) Tom is black in color.
 - e) Cats like milk
 - f) Rats like cheese
 - g) The cat sat on the bed
 - h) A cat is a mammal
 - i) A Rat is an animal
 - j) All mammals are animals
 - k) Every mammal gives birth a baby
7. What do you mean by membership of an element in a fuzzy set? Explain the steps involved in Fuzzy Learning with suitable example. [2+6]
8. Define Artificial Neural Network. How non-linearity can be modelled through this ANN? Explain with example. [1+7]
9. List down the challenges faced by NLP. Why do you think machine vision is important in AI? Explain with example. [2+5]
10. Write short notes on: [3×4]
 - a) Hill climbing algorithm
 - b) SOM
 - c) Expert system