

**III/IV B.Tech. DEGREE EXAMINATIONS, NOVEMBER- 2019**

**Second Semester**

**COMPUTER SCIENCE ENGINEERING**

**ARTIFICIAL INTELLIGENCE**

**Time: Three Hours**

**Maximum marks:60**

**Answer Question No.1 Compulsory**

**6X2=12 M**

**Answer ONE Question from each Unit**

**4X12=48 M**

1. a) Constraint satisfaction problem
- b) Why problem formulation should follow goal formulation
- c) Brief on unification
- d) Use of online search agent in unknown environment
- e) Supervised Vs Unsupervised learning
- f) Define Uncertainty? How it is resolved

**UNIT-I**

2. a) Illustrate a possible result of a heuristic search procedure by defining a suitable heuristic function for an eight puzzle problem.
- b) Discuss the areas of applications of AI.

**(OR)**

3. a) Distinguish between simple planning agent and problem solving agent.
- b) State Turing test and explain its relevance to AI.

**UNIT-II**

4. a) Describe the minimax algorithm with an example?
- b) Explain forward chaining algorithm with an example.

**(OR)**

5. Explain in details about active and passive reinforcement learning.

**P.T.O**

### UNIT-III

6. a) Consider the following sentences:
- Marcus was a man
  - Marcus was a Pompeian
  - Marcus was born in 40 AD
  - All men are mortal
  - All pompeians died the Volcano erupted in 79 AD
  - No mortal lives for more than 150 years
- i) Convert them to clause form
- ii) Answer the question “is Marcus dead now” in two different ways.  
Clearly state the assumptions made.
- b) What is Resolution? Suggest an algorithm to resolve a set of sentences given in prepositional logic.

**(OR)**

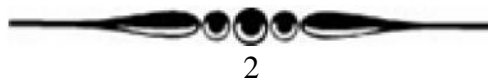
7. a) Explain the Inference in Temporal model.
- b) Write a short notes on Hidden Markov model.

### UNIT-IV

8. a) Explain Bayesian method of reasoning?
- b) Define certainty factor. What are the components of certainty factor? Explain.

**(OR)**

9. a) Explain Deduction method of learning.
- b) Explain variable elimination algorithm for answering queries on Bayesian networks.



**III/IV B.Tech. DEGREE EXAMINATIONS, APRIL- 2019****Second Semester****COMPUTER SCIENCE ENGINEERING****ARTIFICIAL INTELLIGENCE****Time: Three Hours****Maximum marks:60****Answer Question No.1 Compulsory****6X2=12 M****Answer ONE Question from each Unit****4X12=48 M**

1. a) State the relationship between Intelligence and Knowledge
- b) Brief on search efficiency in terms of branching factor and total number of nodes.
- c) What is well formed formula in propositional calculus?
- d) Express 'A car without wheels is not valuable' in predicate logic.
- e) What are the features of NLP?
- f) What is over fitting?

**UNIT-I**

2. a) Describe the heuristic search techniques applied to hill climbing problem with an example.
- b) Explain the state space search representation of Water Jug problem.

**(OR)**

3. Give a suitable state search representation for 8 puzzle problem. Describe with suitable diagrams. Explain how the problem can be solved by state space search. Show how heuristic can improve the efficiency of search?

**UNIT-II**

4. a) Define Artificial Intelligence. Explain the techniques of A.I. Also describe the characteristics of Artificial Intelligence.
- b) A problem-solving search can precede either forward or backward. Discuss the factors that determine the choice of direction for a particular problem?

**P.T.O**

**(OR)**

5. a) Explain the concept of reinforcement learning for games.
- b) Distinguish between simple planning agent and problem solving agent?

**UNIT-III**

6. a) Explain standard quantifiers for first order predicate logic with example.
- b) Look at the following sentences:

Ramu is a soldier

Ramu is a resident of Madras

Madras is in India

All Indian soldiers know Hindi

Convert them into predicate form and resolve to answer the question-

Does Ramu know Hindi? (What additional information is needed to answer the question?)

**(OR)**

7. a) What is Resolution? Suggest an algorithm to resolve a set of sentences given in propositional logic.
- b) Write the algorithm for deciding entailment in propositional logic.

**UNIT-IV**

8. Define and explain the concept of "Learning" Describe the features of the following methods of Learning: (i) Memorization (Rote learning) (ii) Direct Instruction (Taking advice) (iii) Analogy (By example) iv) Induction v) Deduction

**(OR)**

9. Explain about the exact inference in Bayesian networks.

