

**D 31388.**

**(Pages 3)**

**Name**

**Reg. No. ....**

**THIRD SEMESTER M.Sc. DEGREE EXAMINATION, DECEMBER 2012**

**(CUCSS)**

**Computer Science**

**CS C3 C 04—ARTIFICIAL INTELLIGENCE**

**(2010 Admissions)**

**Time : Three Hours**

**Maximum : 36 Weightage**

**Part A**

*Answer all questions.*

*Each question carries 1 weightage.*

1. What is a production system ? What are the advantages of production system ?
2. What are the problems with hill climbing ?
3. With suitable example, explain crypt-arithmetic problem.
4. Compare inferential knowledge and procedural knowledge.
5. With suitable example, explain how simple facts can be represented in logic.
6. Explain the advantages of "clause form".
7. With suitable example, illustrate the use of cut in PROLOG programming.
8. List and explain the basic control strategies in PROLOG.
9. Explain conceptual dependency.
10. Explain semantic net.
11. Define Expert Systems.
12. List characteristics of Expert Systems.

**(12 x 1= 12 weightage)**

**Part B**

*Answer any six questions.*

*Each question carries 2 weightage.*

13. Explain Best First Search.
14. Compare Heuristic search and state space search.
15. Consider the following sentences :—
  - Kevinson likes all kind of food.
  - Apples are food.
  - \$ Mutton is food.

**Turn over**

Anything anyone eats and is not killed by is food.

- **Johny** eats broiler chicken and is still alive.

- (a) Translate these sentences into formulas in predicate logic.
  - (b) Prove that **Kevinson** likes broiler chicken.
16. Write note on control knowledge.
  17. Explain "Object in PROLOG" with suitable example. Define predicates **even(x)** and **odd(x)**.
  18. Explain Non-monotonic reasoning system.
  19. **Define grammar**. Explain bottom-up parsing.
  20. Write notes on Knowledge acquisition. •
  21. Write a note on Expert System shell.

(6 x. 2 = 12 weightage)

### Part C

Answer any **three** questions.  
Each question carries **4 weightage**.

22. Consider the following problem :—

A farmer wants to get a lion, a fox, a goose and some corn across a river. There is a boat, but he can take only one in addition to himself on each trip, or else both the goose and the corn, or both the fox and the corn. The corn cannot be left with goose as it will eat the corn; similarly, the fox may eat the goose if left together and also the fox cannot be left with the lion. How does **everything** get across the river ? Assume animals do not wander off when left alone.

- (i) Give the start and goal states along with constraints.
  - (ii) Draw state space search trees using **DFS** and **BFS** to find first solution.
  - (iii) Solve this problem using constraint satisfaction method.
23. Write notes on :
    - (a) Logic programming.
    - (b) Forward and backward reasoning.
    - (c) Conflict resolution.
  24. Write notes on :
    - (a) Default reasoning.
    - (b) Dependency - directed reasoning.
  25. Write notes on :
    - (a) Case grammar.
    - (b) Semantic analysis.

26. Write notes on

- (a) Translation.
- (b) Modelling beliefs.
- (c) CYCIN.

27. (a) Discuss Expert System Life cycle.

- (b) Write notes on representation and using domain knowledge in Expert Systems.

(3 x 4 = 12 weightage)