24333

B. Tech. 6th Semester (Information Technology)

(F. Scheme) Examination, May–2012

INTELLIGENT SYSTEMS

Paper–CSE-304-F

Time allowed : 3 hours]   *[Maximum marks : 100*

*Note : Attempt five questions in all. **Question No. 1** is **compulsory** and attempt at least **one** question from each section.*

1. (a) What are the various uses of Artificial Intelligence ?

   (b) Write down the names of any four expert systems.

   (c) How would you determine whether a system is intelligent or not ?

   (d) Write down the limitations of Propositional Logic.

   (e) Differentiate between artificial intelligence program and conventional program.

   (f) What is predicate logic ? Give its quantifier with example.

   (g) Convert the following into DNF :

   $((A \rightarrow B) \leftrightarrow C)$

(h) In case of Hill Climbing Problem, what would happen when a state is better than all its neighbors but not so when compared to states that are farther away and how would you resolve it ?

(i) Give the structure of biological neuron.

(j) Explain the concept of rule based expert system.

Section–A

2. Define brute force search and heuristic searching techniques with the help of suitable examples. Explain the various types of these searching techniques.　20

3. (a) Explain AO* Algorithm with the help of example.　10

(b) Write a program in PROLOG to implement the quick sort.　10

Section–B

4. (a) Make the procedural and declarative frames of the following :　10

(i) For cleaning the carburettor of a scooter.

(ii) For a computer lab

(iii) For making a cup of tea

(iv) Frame structure of a department.

(b) What is Bayesian Theorem ? Make the Bayesian network of the following problem : 10

Suppose we observe following evidence in a car :

S : The car has starting problem.

H : The headlights are not functioning.

The beliefs or hypothesis supporting these evidences can be :

N : There is no fuel in the car.

O : The car battery is not properly charged.

P : The headlight bulbs are fuse.

5. Explain various knowledge representation schemes in detail. 20

Section–C

6. (a) Differentiate between statistical reasoning and symbolic reasoning. 10

(b) Define planning. Discuss the goal stack planning with example. 10

7. (a) Define fuzzy reasoning. What are the various operations on fuzzy set ? 10

    (b) Explain temporal reasoning in detail. 10

Section–D

8. What do you understand by forward reasoning and backward reasoning ? Explain with examples. A problem solving search can proceed either forward or backward. What factors determine the choice of direction for a particular problem ? 20

9. (a) What is artificial neural network ? What are its various types and advantages ? 10

    (b) Define learning. Explain various learning methods. 10