Bachelor in Information Technology (BIT)

Term-End Examination

June, 2007

CSI-23 : TECHNIQUES OF ARTIFICIAL INTELLIGENCE

Time : 2 Hours   *Maximum Marks : 60*

Note :   *There are two sections in this paper. Section A is* **compulsory**. *Answer any* **two** *questions from Section B.*

SECTION A

1.   For each of the following statements, state whether it is *true* or *false* :

   (i)   LISP was invented by Alan Turing.

   (ii)   Backward chaining is one form of inferencing.

   (iii)   In a search space goal states are defined.

   (iv)   'Null' is a valid LISP predicate which returns value true if the expression has one argument.

   (v)   Property lists are used to define properties of atoms.

   (vi)   'Learning' is an essential feature of an expert system.

   (vii)   'Heuristic Knowledge' is one form of essential knowledge..

   (viii) A 'horn clause' can have maximum two literals.

   (ix)   Hill climbing search technique is uninformed search technique.

   (x)   LISP is a pure functional language.

2.   Define the following :

   (i)   Knowledge manipulation

   (ii)   Hypothesis

   (iii)   Mapping functions in LISP

   (iv)   Logical consequence

   (v)   Formal system

3. Consider following sentence :

"Birds are flying."

Prepare semantic net for this sentence.

4. Differentiate between binary resolution and linear resolution. Give an example of each.

SECTION B

*Attempt any **two** questions from this section.*

5. (a) Explain the difference between forward and backward chaining. Under what conditions would each be best to use for a given set of problems ?

(b) Write a function in LISP to calculate sum of squares of first five integers.

(c) Write any 5 limitations of AI.

6. (a) Consider the following tree :
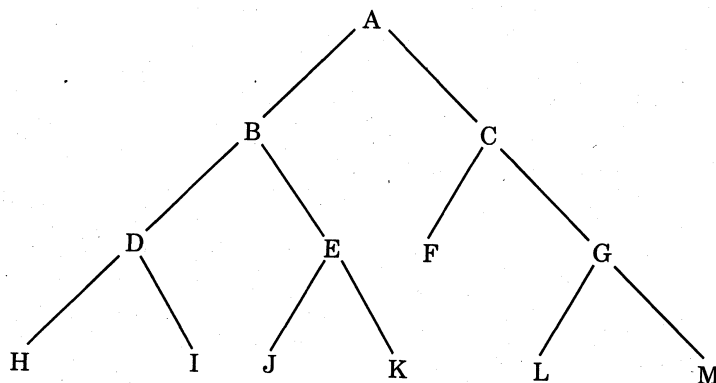
List the elements for

(i) Breadth first search

(ii) Depth first search

(b) Design a variable binding to match the following lists :

(i) (abc (d(a)) f), (?x bc (d ?y) ?z)

(ii) (*x ab (cd) *x), ((ef) ab *y ef)

(c) Explain five applications of Fuzzy logic.

7. (a) Differentiate between exact reasoning and inexact reasoning. Give an example of each.

(b) With the help of an appropriate diagram, explain the general architecture of an expert system.