

## 1997 Paper 13 Question 8

### Prolog for Artificial Intelligence

A binary tree is constructed from binary compound terms  $n(a, b)$  called *nodes*, where components  $a$  and  $b$  are either nodes or integers. Suppose integer components are restricted to the values 0 and 1.

Write a Prolog program to return a list of all the 0's and a list of all the 1's in a given tree. For example, the goal `enum(n(n(0,1),1),X,Y)` should instantiate `X` to `[0]` and `Y` to `[1,1]`. The program is required to use difference lists. [20 marks]