6.034 Quiz 2
October 21, 2009

Name	
EMail	

Circle your TA and recitation time, if any, so that we can more easily enter your score in our records and return your quiz to you promptly.

TAs
Erica Cooper
Matthew Peairs
Charles Watts
Mark Seifter
Yuan Shen
Jeremy Smith
Olga Wichrowska

Thu	
Time	Instructor
11-12	Gregory Marton
12-1	Gregory Marton
1-2	Bob Berwick
2-3	Bob Berwick
3-4	Bob Berwick

Fri	
Time	Instructor
1-2	Randall Davis
2-3	Randall Davis
3-4	Randall Davis

Problem number	Maximum	Score	Grader
1	50		
2	50		
Total	100		

There are 11 pages in this quiz, including this one. In addition, tear-off sheets are provided at the end with duplicate drawings and data.

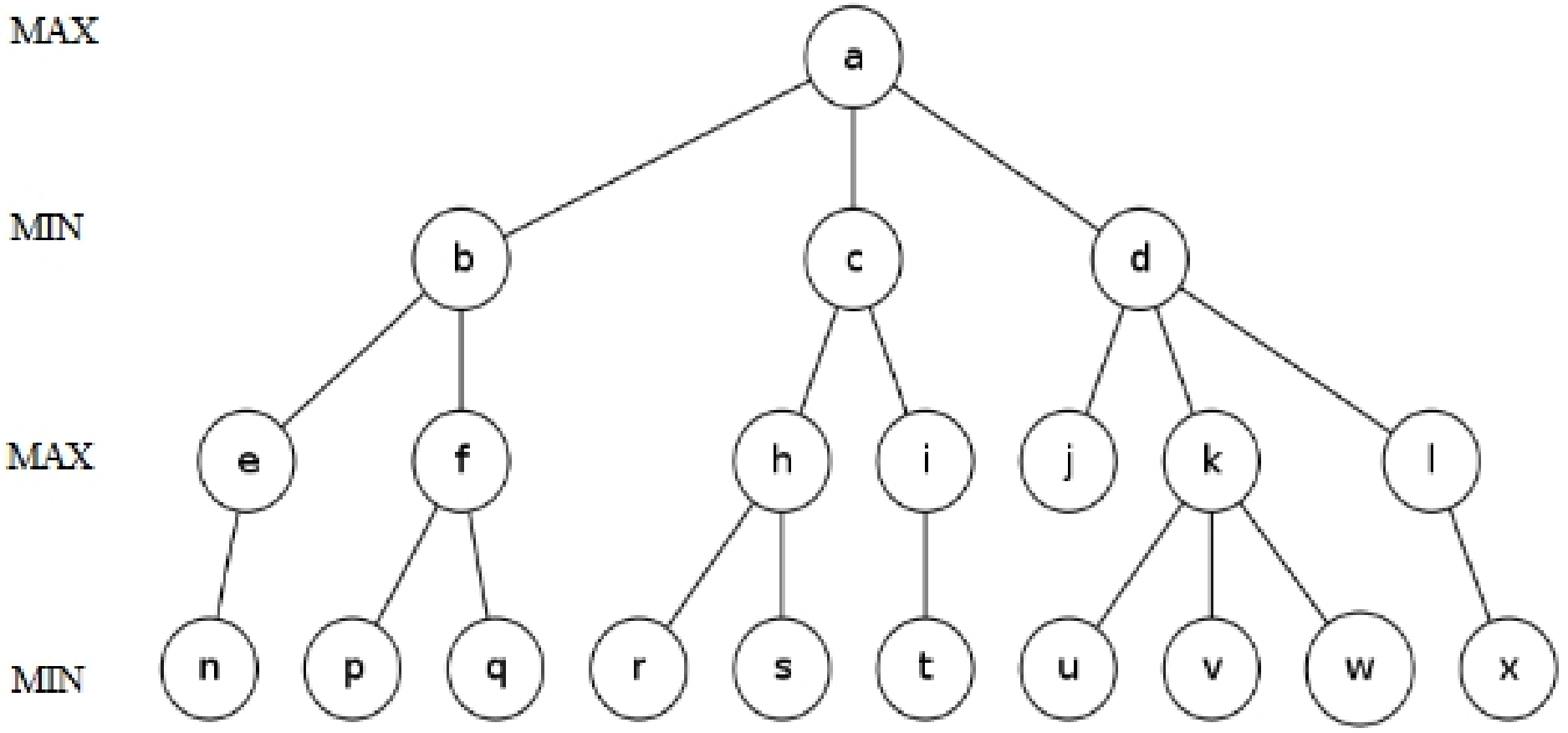
As always, open book, open notes, open just about everything.

Problem 1:Games (50 points)

For your reference in working this problem, pseudo code for the standard version of minimax with alpha beta is given on the tear off sheet at the end.

Part A: Working with a maximally pruned tree (25 points)

For the following min-max tree, cross out those leaf nodes for which alpha-beta search would **not do static evaluations** in the best case possible (minimum number of static evaluations, maximum pruning of nodes to be statically evaluated).



Part A1

Now, list the leaf nodes at which alpha-beta would do static evaluations in the best case possible.

Part A2

What is the final value returned by the alpha beta search in the best case possible for the given tree? Express your answer as the simplest function of the static values of the leaf nodes (e.g. take **n** to be the static value at the leaf node labeled n). Your function may contain operations such as **max** and **min**.

Part A3

What constraints ensure best case possible (minimum static evaluation) for the given tree? State your constraints as inequalities on the static values of the leaf nodes.

Part A4

Suppose your static evaluation function, S(node), is modified as follows:

S'(node) = 42 x S(node) + 1000. (If S(node) = 1, S'(node) = 1042)

Would your answer for Part A1 be the same for all possible S(node) values? **Yes** **No**

Suppose your function were

S'(node) = - 42 x S(node) + 1000.

Would your answer for Part A1 be the same for all possible S(node) values? **Yes** **No**