Question 9 (a) What properties must a graph satisfy in order for it to be a *tree*? [2]

(b) (i) Design a balanced binary search tree for an ordered list of 11 records. Label the records $1, 2, \ldots, 11$ in your tree. [4]

(ii) What is the height of the tree that you have constructed? [1]

(iii) What is the maximum number of comparisons that would have to be made to match any existing record? This number should include the final comparison that determines the match. [1]

(c) Calculate the least height of a binary search tree that has 1000 records stored at its internal nodes. [2]