科目：資料結構與演算法　適用：資工系

編號：341

考生注意：
1.依次序作答，只要標明題號，不必抄題。
2.答案必須寫在答案卷上，否則不予計分。
3.限用藍、黑色筆作答；試題須隨卷繳回。

1. The sequence $F(n)$ of Fibonacci numbers is defined by the recurrence relation

   $F(n) = F(n-1)+F(n-2)$,

   with seed values

   $F(0) = 1$, and $F(1)=1$.

   a. If using a recursive method to calculate the value of $F(12)$, how many times of additive operations will be performed? Explain your answer briefly. (15%)

   b. If using the dynamic programming method to calculate the value of $F(12)$, how many times of additive operations will be performed? Explain your answer briefly. (15%)

2. For an AVL tree, write a C-like pseudo-codes to determine which one of the R-R, L-L, R-L, L-R rotations should be perform. Explain your answer briefly. (25%)

3. For the problem of "Finding the Convex Hull", give a comparison between the Package Wrapping Method and the Graham's Scan Method. Explain your answer in detail. (25%)

4. How many different binary trees can be made from 5 nodes? Explain your answer. (20%)

試題