

# 大葉大學 96 學年度轉學招生考試試題紙

系 別	部 別	年 級	考 試 科 目	考 試 日 期	節 次	備 註
資訊工程學系	日間部	三	資料結構	7月31日	3	共乙頁

註：備註欄若未註明可攜帶計算機或其他資料作答時，考生一律不准攜帶。

11:10 ~ 12:30

1. Prove or disprove the the following statements.(10%)
  - a.  $n! = O(n^n)$ .
  - b.  $10n^2 = \Omega(n^3)$ .
2. The Fibonacci numbers are defined as:  $f_0 = 0, f_1 = 1$ , and  $f_i = f_{i-1} + f_{i-2}$  for  $i > 1$ . Write a recursive function to compute  $f_i$  with C++ language.(10%)
3. Compute the values of failure function for each of the following patterns: (10%)
  - a. a b a a b a a b b
  - b. b b b b a a b b b
4. Write the postfix and prefix of the following expressions:  $A + (B * C + E) / (F + A) * D + C$ . (10%)
5. How many distinct trees are there with 6 nodes?(8%)
6. Write out the inorder, preorder, postorder, and level-order traversals for the binary tree of the Figure 1.(12%)

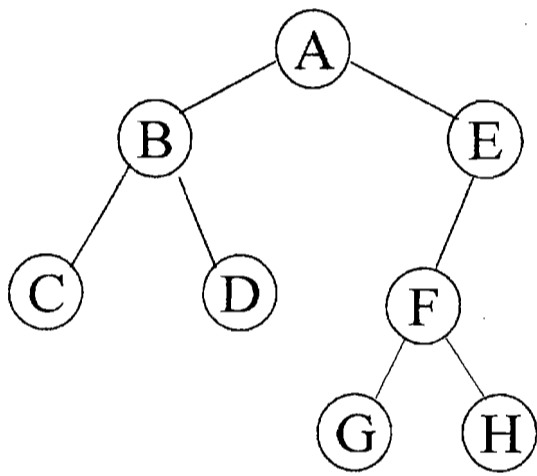


Figure 1

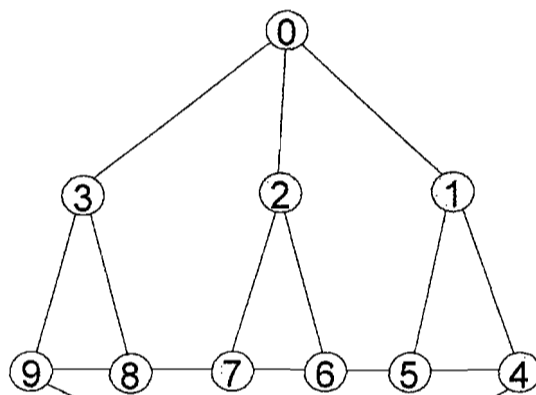


Figure 2

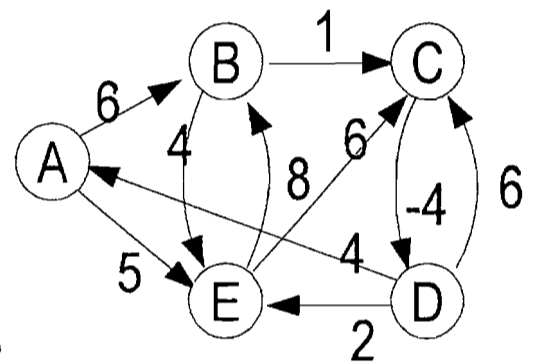


Figure 3

7. Draw a depth-first spanning tree and a breadth-first spanning tree for Figure 2 with root 5.(10%)
8. Find all-pairs of shortest paths of Figure 3. (10%)

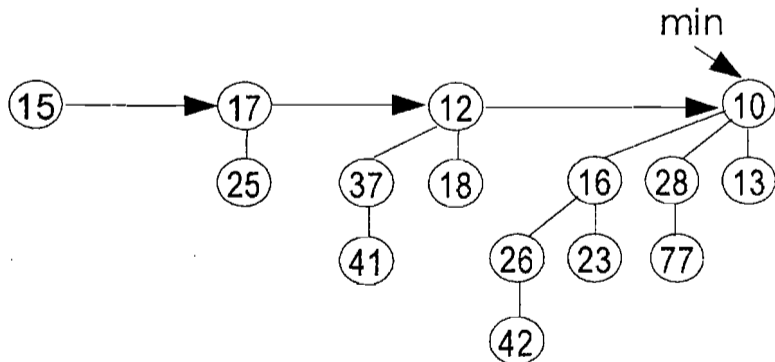


Figure 4

9. Assume that Figure 4 is a Fibonacci heap. Draw the result after insert 16 and then delete 42.(10%)
10. Assume that Figure 4 is a Binomial heap. Draw the result after insert 16 and then delete 42.(10%)