

# 國立彰化師範大學 101 學年度碩士班招生考試試題

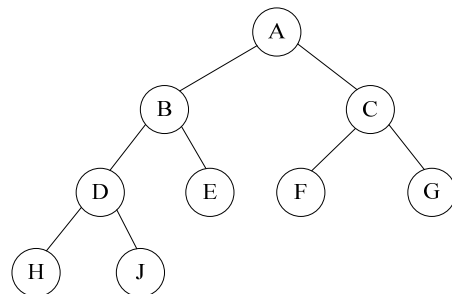
系所： 工業教育與技術學系數位學習碩士班

科目： 資料結構

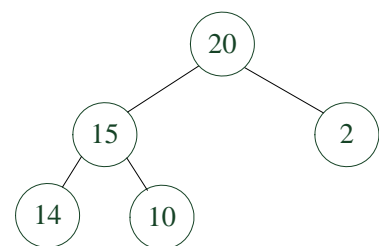
☆☆請在答案卷上作答☆☆

共 2 頁，第 1 頁

1. Please briefly describe
  - (a) Which data structure is suitable to be used by a program at run-time to process function calls? **(5%)**
  - (b) Which data structure is suitable to be used by an operating system (OS) for job scheduling? **(5%)**  
(Note: You must briefly explain your reason.)
2. What is the calculation results of the postfix expressions  $6\ 2\ /\ 3\ -\ 4\ 2\ * +$  and  $6\ 2\ 3\ * / 4\ * 5\ +$ ? **(10%)**
3. Assume that you want to use a linked list to store students' name and score. Please write the code of a node in your linked list. **(10%)**
4. Write the traversal result of the following binary tree: (a) preorder; (b) inorder. **(10%)**



5. (a) What is a max heap tree? **(5%)**  
(b) Given the following heap tree, please show how the elements 21 are inserted. **(5%)**  
(Note: You have to draw the immediate steps or briefly explain your reason for Question (b).)



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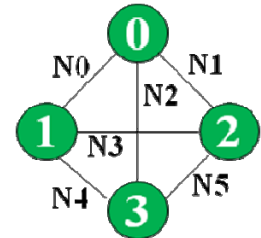
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共 2 頁，第 2 頁

6. Given the following graph, please write its (a) adjacency matrix; (b) adjacency lists. **(10%)**



7. 有一個程式如下：**(15%)**

```
int F (int n) {  
    if (n = 0) return 0;  
    if (n = 1) return 1;  
    if (n = 2) return 2;  
    return (F (n-1) - F (n - 2) + F (n-3));  
}
```

請問：

- (1) F(5)的回傳值是多少？
  - (2) F(n)共被呼叫多少次？(含 F(5))
8. 假設一維陣列A(1...1000)，每元素大小為 4 units，若A(1)之位址為 100，則A(900)之位址為何？**(10%)**
9. 請解釋資料結構之定義？**(15%)**