

國立臺北科技大學 103 學年度碩士班招生考試

系所組別：4130 工業工程與管理系碩士班丙組

第三節 計算機概論 試題

第一頁 共一頁

注意事項：

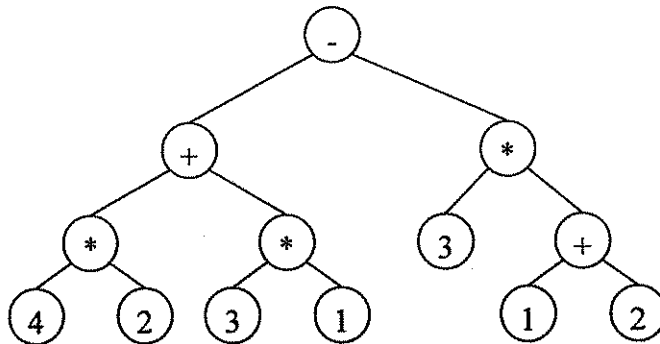
1. 本試題共六題，配分共 100 分。
2. 請標明大題、子題編號作答，不必抄題。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1. The Ackerman(m, n) function is defined by

$$A(m, n) = \begin{cases} n+1 & m=0; \\ A(m-1, 1) & m \neq 0, n=0; \\ A(m-1, A(m, n-1)) & m \neq 0, n \neq 0, \end{cases}$$

- (a) Please calculate $A(1,1)$ and $A(1,2)$ 10%
- (b) Implement the Ackerman function using any computer language. 10%

2. Give the following expression tree of a mathematical equation:



- (a) Please list all the internal nodes and terminal nodes. 5%
- (b) List the post-order traversal of the expression tree. 5%
- (c) Evaluate the expression tree. 5%

3. Design an algorithm to determine whether a positive integer N is a prime number, that is, not evenly divisible by any value other than 1 and itself. The output of the algorithm is either the message "not a prime" or the message "prime". 15%

4. Please write the binary representation of the following decimal numbers:

(a) 89 6%

(b) 168 6%

5. Use the binary search algorithm to decide whether the number 36 is in the following list:

3, 4, 8, 11, 13, 14, 18, 21, 22, 31, 47

What numbers will be compared to 36? 14%

6. What is cloud computing? What advantages does a cloud computing architecture offer?

24%