



注意事項：

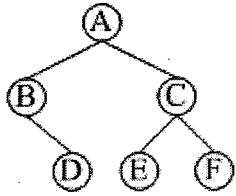
- 1.本科目考試時間共 90 分鐘。
- 2.於答案卷書寫題號依序作答，不必抄題。
- 3.試卷不可書寫任何辨別個人姓名或特殊標記，違反者以零分計算。
- 4.請於試題簽名並填寫准考證號碼，繳卷時「試題」、「答案卷」一併繳回。

一、選擇題(20%)

1. Multiple print jobs line up in a \_\_\_\_\_ within the buffer.  
(A) registry (B) shortcut (C) utility (D) queue
2. A \_\_\_\_\_ is a combination of characters associated with a user name that allows access to certain computer resources.  
(A) password (B) keyword (C) buffer (D) driver
3. A portal Web page, often called a portal, offers \_\_\_\_\_.  
(A) factual information (B) content that promotes or sells products or services  
(C) newsworthy material (D) a variety of Internet services from a single location
4. A method of obtaining information, known as \_\_\_\_\_, relies on a client computer to request a Web page from a server.  
(A) push technology (B) Webcasting (C) pull technology (D) Webpaging
5. A \_\_\_\_\_ is a meeting between two or more geographically separated people who use a network of the Internet to transmit audio and video data.  
(A) newsgroup (B) videoconference (C) chat room (D) discussion
6. \_\_\_\_\_ is a technology that involves reading typewritten, computer-printed, or handwritten characters from ordinary documents and translating the images into a form that a computer can understand.  
(A) Bar code scanning (B) Optical character recognition (OCR)  
(C) Optical mark recognition (OMR) (D) Magnetic-ink character recognition (MICR)
7. Some ATMs (automated teller machines) have \_\_\_\_\_, while others have special keyboards for input.  
(A) scanners (B) graphics tablets (C) joysticks (D) touch screens
8. A Trojan horse \_\_\_\_\_.  
(A) modifies its program code each time it attaches itself to another program or file  
(B) is a malicious-logic program that copies itself repeatedly in memory or on a disk drive  
(C) is a malicious-logic program that hides within or looks like a legitimate program  
(D) infects a program file, but still reports the size and creation date of the original, uninfected program
9. A biometric device \_\_\_\_\_.  
(A) allows users to connect to a computer using a previously established telephone line  
(B) authenticates a person's identity by verifying personal characteristics  
(C) is a unique combination of characters, such as letters of the alphabet or numbers, that identifies one specific use  
(D) is any item that must be carried to gain access to a computer or computer facility
10. Many developers today use \_\_\_\_\_, which contains the standard notation for analysis, design, and documentation for the OO (object-oriented) approach.  
(A) CBT (Computer Based Training) (B) UML (Unified Modeling Language)  
(C) WAP (Wireless Application Protocol) (D) RPG (Report Program Generator)

## 二、簡答題(30%)

1. 請舉例說明 Greedy Method 如何運作? (5%)
2. 列出下列二元樹(Binary Tree)之 Inorder Traversal 及 Preorder Traversal. (5%)



3. 下列時間複雜度  $O(n^2)$ 、 $O(\log n)$ 、 $O(n \log n)$  及  $O(n)$ ，請依其效率由高至低排序之。(5%)
4. 請說明如何使用高階語言中之一維陣列(One-Dimensional Array)加以實作堆疊(Stack)? (5%)
5. 解釋下列專有名詞: (10%)
  - (1). Mobile Commerce
  - (2). VRML
  - (3). MPEG
  - (4). Vector Graph and Bitmapped Graph
  - (5). PDF (Portable Document Format)

## 三、問答題(50%)

1. The Euclidean algorithm finds the greatest common divisor of two positive integers X and Y by the following process:

*As long as the value of neither X nor Y is zero, continue dividing the larger of the values by the smaller and assigning X and Y the values of the divisor and remainder, respectively.*

Please express this algorithm in Pseudocode or implement this algorithm using a High-Level language (C language is preferred). (10%)

2. 將下列數字分別利用 Merge Sort 及 Insertion Sort 由大到小排序之。請詳述各排序方法之原理及步驟，並分析其時間複雜度。(15%)

88, 12, 35, 19, 49, 32, 5, 26.

3. 請證明下列等式恆為真(即 DeMorgan's Theorem)。(5%)

$$\overline{A+B} = \overline{A} \cdot \overline{B}$$

4. 有一數位相機具備 6,000,000 像素的解像力，若其 CCD 之長寬比為 3:2，且紀錄每一像素(Pixel)需要 36 位元(紅、綠、藍各 12 位元)，試問: (1)以此相機所拍攝之影像其長、寬各為多少像素? (2)在不經任何壓縮之情形下(即 Raw file)，紀錄一張影像需要多少記憶體空間? (3)若有一輸出設備之解析度為 300dpi，請問將上述相機所拍攝的影像以此解析度所輸出之尺寸為何? 請務必說明計算過程及單位。(10%)

5. 請寫出下列程式的執行結果: (10%)

```
int MyFunction(int x, int &y) {
    x = x + 5;
    y = y + 3;
    return x + y;
}

int main(void)
{
    int p=2, q=4, r;
    r = MyFunction(p, q);
    while (r-- > ++q) {
        p++;
    }
    cout << "p=" << p << ", q=" << q << ", r=" << r;
    return 0;
}
```