1. Define Fibonacci sequence as \( f(0) = 1, f(1) = 1, \) and \( f(n) = f(n-1)+f(n-2) \) for \( n \geq 2 \). Write a recursive program and a non-recursive program to compute \( f(n) \). (6%)

2. Explain the ACID (Atomicity, Consistency, Isolation, and Durability) properties for databases? (8%)

3. Explain association rules and clustering techniques in data mining and knowledge discovery (4%)

4. What are virtual memory and page fault in memory management of operating systems? (6%)

5. Describe the “bullwhip effects” in supply chain management. (3%) How is information technology deployed to cope with the bullwhip effects? (6%)

6. 有一網路詐騙手法稱為「Phishing」，它是一種病毒？或是駭客？除了使用防毒軟體防範它的侵入，如何可以辨識而不受騙上當？(5%)

7. 無線網路的安全設定有「MAC 位址過濾」項目，試說明其用法。 (5%)

8. 何謂「木馬(Trojan)程式」? 除了使用掃毒軟體檢查電腦裡是否植入木馬程式，能有什麼方式確認電腦確實中了此類病毒？(5%)

9. 簡述快速排序法(Quick Sort) 之解決步驟（要領）(5%)

10. Draw a binary tree whose preorder traversal is NCTUIEMGO and in-order traversal is TCUNEMIOG. (5%)

11. 為何 IP 分享器具有防火牆的功能？(4%)

12. 使用數位相機拍下的照片檔，相較於傳統相機，除了影像的數位化，還有那些附帶的功能？(4%)

13. Write a program in any programming language or pseudo code that can
   (a) Read in a set of English text data (6%),
   (b) Count and output how many words in the input data (18%).
   Describe and analyze your method and assumption (10%).