國立屏東科技大學　九十五　學年度　碩士班暨碩士在職專班招生考試

資料結構

1. Please explain the following terms. (30 分)

   (1) Linked list
   (2) Queue
   (3) Breadth-First Search
   (4) B-tree of order M
   (5) AVL tree
   (6) Collision (in hashing)

2. Write the postfix form of the following expressions. (10 分)

   (1) ((A/(B-C+D))*(E-A)*C
   (2) A/B-C+D*E-A*C

3. Please construct Huffman binary tree for the following six messages whose frequencies of appearance are A=5, B=2, C=3, D=4, E=10, and F=1. Suppose that D is encoded as 110 and F is 1000. What are A, B, C, and E encoded? (請詳列步驟) (15 分)

4. 請分析比較 Insertion Sort, Selection Sort, Merge Sort, Quick Sort, Heap Sort 五種排序演算法之特性，並列出每種方法的最差情況(worst case)之 running time complexity? (15 分)

5. 二元樹(Binary Tree) T 的 preorder traversal sequence 為 ABCEFGD，inorder traversal sequence 為 BAFEGCD。 (20 分)

   (1) 請畫出此二元樹 T。
   (2) 請用一維陣列(One-dimensional Array)來表示此二元樹 T。

6. 若要將一個圖形(Graph)轉換成可以輸入電腦中處理，一般常用 adjacency matrix 和 adjacency list 兩種表示方式。請比較兩種方式使用上之優、缺點，並寫出下圖(Graph)之 adjacency matrix 和 adjacency list。 (10 分)