佛光人文社會學院九十五學年度碩士班招生考試試題卷

系所別：資訊學系

科　目：資料結構　　用紙第 1 頁共 1 頁

1. List two methods to solve the overflow problem in hash tables, and give examples to illustrate your answer. (10%)
2. What are the advantages and the disadvantages of using static memory allocation and dynamic memory allocation? (10%)
3. What are stack and queue? Give an algorithm to illustrate the implementations of a stack and a queue using linked list. (10%)
4. Construct a max heap and draw the results for the following operations. (10%)
   (a) insert with following order *12, 10, 15, 20, 8, 25, 30, 6, 18, 70, 16,*
   (b) delete a node from the heap.
5. Construct a binary search tree with the following inserting order. And state the algorithms and write results with preorder, inorder, and postorder for traversing the binary search tree. (15%)

   66, 78, 90, 62, 34, 12, 15, 45, 16, 80.
6. Write an algorithm to transform an infix expression *e* into its postfix equivalent. (10%)
7. Give examples to illustrate the deletion from a binary search tree. (10%)
8. Using Quick-Sort to sort the following numbers. List the result for each stage. (10%)

   60, 68, 99, 66, 43, 12, 16, 46, 10, 85.
9. Construct (a) depth-first and breadth-first spanning trees starting at vertex *C*, and (b) the minimum cost spanning trees for the following graph. (15%)