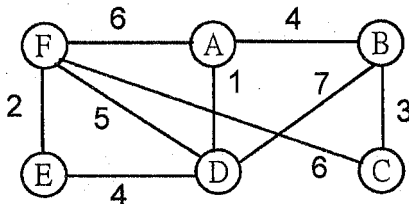


系級	資訊科學系碩士班.	考試時間	100 分鐘
科目	計算機概論	本科總分	100 分

- (10%) Assume that no data compression is applied. What is the maximum data throughput for a 57600bps modem when the communication setting is 8 data bits, even parity, and 1 stop bit (8E1)?
- For the following sequence, $F(n) = 5F(n-1) + 2F(n-2)$ for $n > 2$ and $F(0) = 0, F(1) = 1$.
 - (10%) Write a recursive function (in Pascal or C) to compute the n th term of the sequence.
 - (10%) Write an iterative function (in Pascal or C) to compute the n th term of the sequence.
- (5%) Use Prim's algorithm to find the minimum spanning tree in the following graph. Show the first, second actions and your result.



- (10%) For the graph as above, use Floyd's algorithm to find the shortest path matrix that contains the lengths of the shortest paths for all pairs of vertices and show the shortest *path* from B to E.
 - (5%) Could Floyd's algorithm be used to find the shortest paths in the graph with edges having the negative weight? Justify your answer.
- Given POSTORDER and INORDER of a binary tree,

POSTORDER : D H B E A I G F C

INORDER: D A H E B C F I G

 - (5%) Reconstruct the binary tree.
 - (5%) Show the PREORDER of a binary tree.

背面尚有試題

東吳大學 九十四 學年度碩士班研究生招生考試試題

系級	資訊科學系碩士班	考試時間	100 分鐘
科目	計算機概論	本科總分	100 分

5. (10%) Suppose we have numbers between 1 and 100 in a binary tree and we want to search for the number 57 in the tree. Could the following sequence be the sequence of nodes to be examined? (Justify your answer to get credit)

2, 90, 63, 70, 68, 72, 57

6. Suppose $A[1..9, 1..10]$ is a two-dimensional array of integers. A is stored in memory with each integer occupying two bytes memory. The base address of A is 240.

(a) (5%) What is the address of $A[2][5]$, if A is stored by the column-major method.

(b) (5%) What is the address of $A[3][8]$, if A is stored by the row-major method.

7. (10%) What is the maximal length of a codeword possible in a Huffman encoding of an alphabet of n characters?

8. (10%) The following table represents the addresses and contents of some cells in a machine's main memory using hexadecimal notation. Starting with this memory arrangement, following the sequence of instructions and record the final contents of each of these memory cells:

Address	Contents
00	02
01	5A
02	D6
03	2B

Step1: Move the contents of the cell whose address is 03 to the cell at address 00.

Step2: Move the value 01 into the cell at address 02.

Step3: Add the value stored at address 01 into the cell at address 03.