ECE242F, Quiz #3a **November 15, 2001**

Name & Student #:

1. [8 marks] Here is an adjacency matrix, M, representing an undirected, weighted graph:

$M =$

	1	2	3	4	5	6	7	8
1	∞	7	∞	∞	∞	5	∞	3
2	7	∞	8	∞	10	∞	∞	∞
3	∞	8	∞	5	4	∞	∞	∞
4	∞	∞	5	∞	∞	∞	6	∞
5	∞	10	4	∞	∞	∞	9	∞
6	5	∞	∞	∞	∞	∞	3	∞
7	∞	∞	∞	6	9	3	∞	∞
8	3	∞	∞	∞	∞	∞	∞	∞

Draw a Minimum-Cost Spanning Tree for the graph represented by M, and state the sum of its edge weights.

2. Integer array `h`[`1`...`31`] and integer variable `last` are used to implement a heap, where each node has a key that is greater than its descendents.

   (a) [2 marks] If `last = 31`, how many levels are in heap `h`? Explain.

   (b) [2 marks] If `h` has the heap-order property, its largest element is in `h[1]`. Does it follow that its smallest element is in `h[last]`? Explain.

3. [3 marks] A BST is created by inserting the following character keys in the order they occur, from left to right: `D`, `G`, `B`, `I`, `C`, `A`, `F`, `H`, `J`, `E`. List the keys in the order they would be visited by an `InOrder` traversal, starting from the root.