

MSCSIS Learning Goal 1:

Graduates will be able to formulate and solve problems using advanced mathematics and numerical methods, and computer information systems-based techniques.

(Updated January 2010)

Content Knowledge Assessment
September 15, 2009, Update

CSC 532 Content Knowledge Assessment--Spring 2009 (N = 1)		
	Question and Answers	Avg. % Correct
1	Is the following true or false? f(n) = O(g(n)) implies g(n) = O(f(n))	0.0
2	Is the following true or false? f(n) = O(g(n)) implies g(n) = Ω(f(n))	100.0
3	What is the O() complexity for the following function. Give your answer as a function of n. float PiPower(n) { int i = 1; float prod = 3.14; while (i < n) { prod = prod * prod; i = 2 * i; } return (prod); }	100.0

4	What is the $O()$ complexity for the following segment of program which multiplies two matrices a and b (resident in 2-d arrays) to find the result matrix in c. Assume that the assignment statement takes constant time.	100.0
	<code>int i = 0, j = 0, k = 0;</code>	
	<code>float a[n][n], b[n][n], c[n][n];</code>	
	<code>for (i = 0; i < n; i++)</code>	
	<code>for (j = 0; j < n; j++)</code>	
	<code>for (k = 0; k < n; k++)</code>	
	<code>c[i, j] = c[i, j] + a[i, k] * b[k, j];</code>	
5	The two most common algorithms (Prim and Kruskal Algorithms) to solve <i>Minimum Spanning Tree</i> problem belong to which of the following class of techniques.	100.0
6	Which of the following characterizes the applicability of <i>Dynamic Programming</i> technique to solve problems?	100.0
7	Write a recurrence for the running time $T(n)$ of $f(n)$, and solve that recurrence. Assume that addition can be done in constant time.	0.0
	<code>def f(n):</code>	
	<code>if n == 1:</code>	
	<code>return 1</code>	
	<code>else:</code>	
	<code>return f(n - 1) + f(n - 1)</code>	
8	Decide whether you think the following statement is true or false.	0.0
	In a <i>flow network</i> which has maximum flow from node s to node t the flow across any s-t cut (no matter which cut is considered) is the same.	
9	Which of the following characterizes the applicability of <i>Linear Programming</i> technique to solve problems?	100.0
10	Decide whether you think the following statement is true or false.	0.0

	<p>Let G be a <i>flow network</i>, with a source s and a sink t, and a positive integer capacity $c(e)$ on every edge e. If f is a maximum flow in G, then f saturates every edge out of s with flow (i.e. for all edges e out of s, we have $f(e) = c(e)$).</p>	
	<p>Average Correct</p>	<p>60.0</p>

Action Taken:

MS CSIS Advisory Committee met on October 2, 2009, and discussed learning objectives and data collected so far. MS CSIS reported the following.

The committee discussed what to do with the AOL data collected thus far. It was decided that Ron Vetter would send the summary data for each of the content knowledge areas to the faculty who last taught the courses where the data was originally collected and ask for any feedback they might have.