University of Nevada, Las Vegas Computer Science 456/656 Spring 2015

Assignment 7: Due March 12, 2015

Name:_____

You are permitted to work in groups, get help from others, read books, and use the internet. But the handwriting on this document must be your own. You may attach extra sheets, using a stapler.

1. Let L be the language generated by the context-free grammar G_1 given below.

   (a) Prove that G_1 is ambiguous.

   (b) Give an unambiguous grammar G_2 which is equivalent to G_1.

   1. $E \to E + E$
   2. $E \to E * E$
   3. $E \to x$
   4. $E \to y$

2. Complete the ACTION and GOTO tables of an LALR parser for the grammar given below. This grammar unambiguously generates the "balanced parentheses" language, where a represents a left parenthesis, and b represents a right parenthesis. Example strings include ϵ, ab, $aabb$, $abab$, and $aabbab$.

   1. $S \to \epsilon$
   2. $S \to a_2 S_3 b_4 S_5$

	a	b	**eof**	S
0				1
1			**halt**	
2				
3		$s4$		
4		$r1$		
5				