Quiz 2 – CS 315

Name: __________________, ID: __________________

“The biggest difference between time and space is that you can't reuse time.” – Merrick Furst

Consider the following grammar:

```
1. SetLiteral → '{' SetLiteralBody '}'
2. SetLiteralBody → ε
3. SetLiteralBody →  NonEmptyBody
4. NonEmptyBody → SetElement
5. NonEmptyBody → SetElement ',' NonEmptyBody
6. SetElement → ID
7. SetElement →  SetLiteral
```

a) (6pts) Left factor this grammar (i.e., factor out the shared RHS prefix from the rules 4 and 5). Write each rule on a separate line with a unique number (i.e., do not use | to fold two rules into one). Name the new non-terminal you introduce as Tail.

```
1. SetLiteral → '{' SetLiteralBody '}'
2. SetLiteralBody → ε
3. SetLiteralBody →  NonEmptyBody
4.
5.
6.
7. SetElement → ID
8. SetElement →  SetLiteral
```

b) (6pts) For each rule (there should be 8 of them), compute the PREDICT() function. That is, find the set of look ahead characters for which the rule can be applied.

PREDICT(1): PREDICT(2): PREDICT(3): PREDICT(4):

PREDICT(5): PREDICT(6): PREDICT(7): PREDICT(8):

c) (6pts) Create an LL parse table for the new grammar.

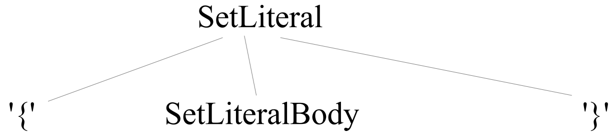
	'{'	'}'	','	ID
SetLiteral				
SetLiteralBody				
NonEmptyBody				
Tail				
SetElement				

d) (8pts) Parse the following input using the parse table.

Stack	*Input*	*Rule*
SetLiteral	{ A, {B}, {} }	1
'{' SetLiteralBody '}'	{ A, {B}, {} }	Eat {
SetLiteralBody '}'	A, {B}, {} }	

DONE	DONE	DONE

e) (4pts) Draw the parse tree


SetLiteral
'{'
SetLiteralBody
'}'