Midterm (Compiler) Name: _____ Grade:_____

1.(10%).Is the following grammar LL(1) ? Explain why ?

S→ABBA

A→a

A→ε

B→b

B→ε

2. (10%) Rewrite the following left recursive grammar into non-recursive EBNF grammar.

<exp> ::= <term> | <exp> + <term> |<exp> - <term>

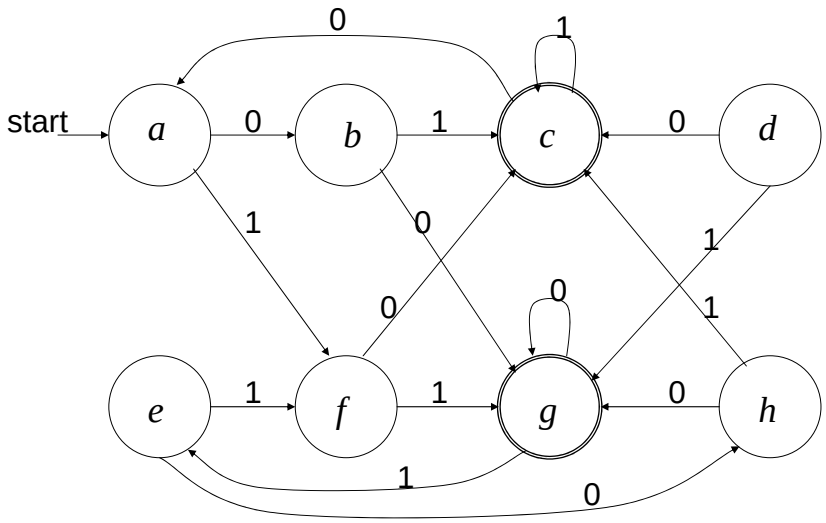
3.(10%) Use one example to show that the following grammar is ambiguous.

stat → **if** cond **then** stat
| if cond **then** stat **else** stat
| other-stat

4. (10%) Reduce the following transition table.

		Input		
	δ	a	b	c
	1	2	5	
	2	3	4	1
	3	5	2	
States	4	3	2	1
	5	1	4	1
	6	1		1
	7	3	6	3

5. (10%) For the following NFSM, find the corresponding DFSM with the minimum number of states.



6..(30%) For the following grammar:

<E> ::= <T> <E'>

<E'> ::= + <T> <E'> |ε

<T> ::= <F> <T'>

<T'> ::= * <F><T'> |ε

<F> ::= (<E>) | id

(a) (10%) Find First and Follow sets (for each non-terminal symbol).

(b) (10%) Create its parsing table.

(c) (10%) Shows the move made by predictive parser on input id+ id * id (based on a stack).

7. (20%) Lab.

在這次的 lab. 作業 － 用 lex 寫 scanner 中

(a) 在 Lex 中，被 regular expression 辨認出來的 token 的長度會存放到哪個變數中?

(b) 在 Lex Program 中，分別有 Definition section、Rules section 與 User subroutines section，這三個段落用甚麼符號相隔

(c) 在 Lex Program 的 regular expression 中， ^ 代表的是?

(d) 在 Lex Program 的 regular expression 中， . 代表的是?

(e) 在 Lex Program 的 regular expression 中，如何忽略空白字元?