一、**Mark each statement *true* or *false* (2 points each， 6 cents)**

1. The same language token may be generated by many different regular expressions.
2. To any regular expression, we can find a context-free grammar defining the same language.
3. The LL(1) parsing algorithm parses an input string of tokens by tracing out the steps in a rightmost derivation.

二、**Single Choice (1 points each , 5 cents)**

1、The concept ( ) is not related to the LL(1) parsing method.
[A] Left-factoring [B]. First set and follow set
[C.] Left recursion removal [D]. Shift and reduce

2、Which one below is not a part of a compiler? （这个题目不是太好，就不扣分了）
[A] Symbol table [B] Assembler
[C] Code optimizer [D] Parser

3、In the production A →B α C, we have
[A] Follow (C) ⊂ Follow (A), First(B) ⊂ First(A)
[B] Follow (C) ⊂ Follow (A), First(A) ⊂ First(B)
[C] Follow (A) ⊂ Follow (C), First(B) ⊂ First(A)
[D] Follow (A) ⊂ Follow (C), First(A) ⊂ First(B)

4、IF one CFG grammar contains two non-terminals ‘A’,’B’ and two terminal ‘a’,’b’, where ‘A’ is the start symbol, then the Follow set of ‘A’ may be ( )
[A] {a, b} [B] {a, b, $} [C] {a, b, ε} [D] {a, b, B}

5、In the Top-Down Parsing, the action ( ) will never be used.
[A] Shift [B] Match [C] Generate [D] Accept

三、**question (39 cents)**

1、 Given the NFA for below for 0*(01)*0*, construct a minimum state DFA: (8 cents) （如果状态错的很多的话，就给个基本分3分）

2、Given the follow grammar. （有的同学去掉了 M 再做下一步，应该也算对的 ）
S→L
L→MLb
L→a
M→ε
(S is the start symbol.)
Construct the LR(1) DFA for the grammar. **(10 cents) (错一个状态扣 1 分)**

3、(7 cents)

Give a RE and a CFG for:
$L = \{x \in \{0,1\}^* \mid x \text{ starts and ends with different symbols}\}$

4、Consider the following grammar of simplified C declarations:
declaration → type var-list
type → int | float
var-list → identifier, var-list | identifier
(a) Left factor this grammar. (3 cents) （由于这个第一步没有做好影响下面的正确性，后面扣分可以适当少一点的）
(b) Construct First and Follow sets for the nonterminals of the resulting grammar.(6 cents) （错一个扣一分，扣完为止，注意：$没有的不扣分）
(c) Construct the LL(1) parsing table for the resulting grammar. (5 cents)
（一个扣 0.5 分， 没有$这一列的不扣分，没有逗号的还是要扣分。）