(logo)	**UNIVERSIDAD CARLOS III DE MADRID**
	FORMAL LANGUAGES AND AUTOMATA THEORY
	COMPUTER SCIENCE DEGREE. CONTINUOUS ASSESSMENT - PARTIAL 2
	Last name(s): _____
	First name: _____
	NIA: _____

Duration: 45 minutes

1. Indicate whether the following statements are true or false.

Correct Answer:+0.3   Wrong Answer:-0.3   No answer =0
Minimum Mark: 0   **Maximum Mark: 3 points**

	True	False
In a grammar, the word λ can be included in the set of terminal symbols.		
A sentential form can include nonterminal symbols.		
There is an algorithm to determine whether a grammar is ambiguous or not.		
A::=aB is a rule in CNF.		
For every Type-1 grammar it is possible to find an equivalent Push-Down Automaton.		
Type-2 languages are also called context-free languages.		
Every type-2 grammar is also a type-3 grammar.		
If the number of sentences of a Language is infinite, then the grammar is recursive.		
Every grammar is GNF is a Type-3 grammar.		
S→AbbB→BaA is a derivation of order 3.		

2. Indicate whether the following statements are true or false.

Correct Answer:+0.3   Wrong Answer:-0.3   No answer =0
Minimum Mark: 0   **Maximum Mark: 3 points**

	True	False
Given a grammar ($\Sigma=\{0,1\}$) with the following production rules { S ::= A 1 |0 B | 0, A ::= A 1 | 1, B ::= λ | 0 S}, it is a Type-3 grammar.		
The grammar with axiom S and production rules P={S::=B0; B::=1 | C1; C::=B2; D::=S1} is a recursive grammar.		
Given a grammar (G = {{0,1},{S,A,B},S, P}) with the following production rules P = { S ::= 1 S | 1 A | 0 B | 0 | λ, A ::= 1 A | 1, B ::= λ | 0 B}, it can be transformed into a Type-3 left-linear grammar.		
A::=A is a unit production or redenomination rule		
The production rule AaC ::= AbabC, does not retain the context.		
Given the grammar, G=({a,b} , {A,B,C, S}, S, P={S::= aA; A::= aA | bB; B::= bB | b;},), aabb is a sentence of the language.		
CcdEA::=CCEb is a valid rule for a Type-1 grammar.		
Every Type-3 grammar has an equivalent NON-Deterministic FA.		
Every Type-3 grammar has an equivalent Deterministic FA.		
Given a grammar (G = {{0,1},{S,A,B},S, P}) with the following production rules P = { S ::= 1 S | 1 A | 0 B | 0 | λ, A ::= 1 A | 1, B ::= λ | 0 B}, if the grammar is cleaned and becomes well-formed, then it would be a type-3 right-linear grammar.		

3. (4 points) Given the grammar G = ({0, 1, 2} , {S, A, B, C, D, E}, S, P)

   P = {(S ::= AABC), (A::= λ \| 1A0), (B::=1B \| 1), (C::= 1C1 \| 0C0 \| λ), (D ::= 0)}

a) Which is the type of grammar in the Chomsky Hierarchy?
b) Obtain an equivalent grammar in GNF. Explain in detail the process that you have followed.