Last name	
First name	
Group	

Grade	

Algorithmics
Undergraduate 2^{nd} year (S4)
Midterm #4 (C4)
5 March 2019 - 14 : 45
Answer Sheets

1	
2	
3	
4	
5	

Answers 1 **(Cut points, cut edges –** ***5 points*****)**

1. *Cut points of* G_1*:* _____

2. *Cut edges of* G_1*:* _____

3. The biconnected components of G_1 are :

_____

_____

_____

_____

_____

_____

_____

_____

4. The table of *prefix* and *higher* values is :

	prefix	*higher*
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		

Answers 2 **(I want to be a tree – *8 points*)**

1. *Definitions:*

   ① _____

   _____

   ② _____

   _____

2. (a) *Edges that can be removed:*

   _____

   (b) *the list of the edges of the graph "Not a tree yet" removed:*

   _____

3. During the depth-first search, we assign to each vertex the number the component it belongs to (from 1 to k, if there are k components):

   (a) *Number of edges to add:* ☐

   (b) *What are the edges to add, during the traversal?*

   _____

   _____

   _____

   (c) *the list of the edges of the graph "Not a tree yet" added:*

   _____

4. **Specifications:**
   The function `make_me_tree(`G`)` turns the graph G into a tree and returns the connected component vector of the initial graph.

Answers 3 **(Condensation – *4 points*)**

Specifications:

The function `condensation(`G`,` *scc*`)` builds the condensation G_R of a digraph G, with *scc* its component list. The function returns G_r and the vector of components: a vector that gives for each vertex the number the component it belongs to (the vertex in G_R).

Answers 4 **(Digraphs and Mystery –** ***3 points*****)**

1.

	Call number	*Returned result*
(a) `test(`G_2`)`		
(b) `test(`G_3`)`		

2. *What is the information returned by* `test(G)`*?*

Answers 5 **(Saving Algernon –** ***Bonus*****)**

1. (a) The kidnapper is the one of the lab _____

   (b) Algernon is _____

2.