Name: **SOLUTION**

[8p] Use BFS algorithm starting with the node *, where * is the last digit of your student number, to test the bipartiteness of the graph G, whose adjacency list representation is given below. Show your work.

0	1	10				
1	0	9	11			
2	3	4	10			
3	2	11				
4	2	6	11			
5	6	11				
6	4	5	10			
7	8	9	11			
8	7	10				
9	1	7	10			
10	0	2	6	8	9	11
11	1	3	4	5	7	10

$L_0 = \{ 9 \}$
$L_1 = \{ 1, 7, 10 \}$
$L_2 = \{ 0, 2, 6, 8, 11 \}$
$L_3 = \{ 3, 4, 5 \}$

No edge of G joins two nodes of the same layer. Hence, G is bipartite.

[2p] Is the graph G given above a tree? Explain why or why not.

G is not a tree as it contains cycles; 9-1-11-7-9 for example.