Section A

Question 1
This question was concerned with the floating point representation of real numbers and errors in computations with such numbers. Roughly a quarter of all students selected this question. Although some students did have a good idea what to do, most of the answers were spoiled by miscalculations. The overall result looks slightly disappointing, with an average mark at around 53%.

Question 2
This question was concerned with numerical methods for the solution of simple ordinary differential equations. Most of the students who took this question (approximately 75%) have got the coursework part of it right. In some cases, again, calculation errors led to the reduction in the number of marks awarded. In the advanced part of the question only a few students managed to connect a few facts from the coursework. The overall performance was satisfactory, with the average mark of around 65%.

Section B
In Part B the performance of Q3 was slightly lower than Q4 (lower average and larger standard deviation). However the difference was small and likely not significant

Question 3a seems to have been misunderstood by most students. What was asked was how the single candidate solution algorithms operate, ie in how they improve one candidate solution to another one. Most students understood that the question was about the generic loop of all optimisation algorithms.

In question 4a and 4b most answers did not include enough detail, particularly most answers did not describe how selection operators work (ie the mechanism of roulette wheel, tournament selection or stochastic ranking)

Section C (Questions 5 and 6) Lecturer: Eva Navarro López (ENL)

General comments and statistics
1.43 students presented the exam on the 27th May, 2014.
2. Section C was marked with a maximum of 25 marks.
3. The average mark of section C has been 15.75/25 which represents a 63% of performance.
4. There have been very good marks and some very bad marks. There is probably a correlation of attendance to classes with obtaining an excellent mark. The results are:
a) Number of students with 25/25 (100%): 3 students (7% of 43)
b) Number of students with a mark between 17.5/25 and 25/25 (70%-100%), including the ones with 25/25: 17 students (39.5% of 43).
c) Number of students with a mark between 12.5/25 and 25/25 (70%-50%): 14 students (32.5% of 43).
d) Number of students with a mark between 12.5/25 and 0 (50%-0%): 12 students (28% of 43).
e) No student had 0/25. The lowest mark was 2/25.

5. All the students answered Question 5. It is clear why most of the students answered this question. Question 5 was about complex network models and topological properties. It was the first part of this module. Question 6 is related to the second part of this module, and is about synchronisation and self-organisation in dynamical networks. Students in computer science are not used to this topic, indeed, most of them admitted in class that they have never seen a dynamical system before this course. I am surprised indeed that nobody answered Question 6, since this year, I made more emphasis on this topic in the coursework and in the class than in previous years. I am sure some of you will make use of these concepts in the near future.

Specific comments on Question 5
1) Connectivity in complex networks is related to the degree distribution, which is not the average degree of a network. 2) Now, all of you know what a scale-free network is. In general, most of you have a clear idea what a complex network is and how you can measure its topological properties.

Final comment
It has been really a pleasure to teach you this exciting topic. I have learnt a lot from you and I have enjoyed a lot the lectures. I hope that you can use this in the future. Do not lose the enthusiasm for this fascinating topic. Good luck!