The written exam for physics majors had two parts. The first part dealt with the physics of pigments, modeling the reflective properties of a layer of paint as a myriad of small particles dispersed in a transparent medium.

The problem was solvable using simple physical arguments concerning incoming and outgoing fluxes, as well as the mathematical tool of solving a differential equation by separation of variables. The last part of the exercise contained questions relating the problem to notions such as the band gap in a semiconductor or to wave optics.

We were positively impressed by the skills demonstrated by many of the candidates, with several candidates offering essentially a full solution of the problem. Nevertheless, many candidates seem to consider questions asking for descriptions/explanations/discussions as less important than questions requiring calculations, and some gave merely a few keywords or formulae. We emphasize that such questions are meant to give the candidates the occasion to demonstrate their physical understanding of the problem at hand, and that full credit can only be given for a logically structured argumentation in complete sentences.

The second part of the written exam consisted of six questions relating to classical mechanics. The Lagrangian formalism was briefly introduced in the first problem. The student was then invited to solve the following problems both by analyzing forces, and by applying the Lagrangian method. Overall, the results were encouraging. The only recurring error consisted in not carefully considering the time-dependence of all variables when taking time derivatives in the Euler-Lagrange equations.

The written exam for physics minors was about the van der Waals interaction. It comprised three independent parts. The first (third) part was designed to be easily solvable by mathematics (chemistry) majors. Unfortunately, this year a number of candidates had a very insufficient knowledge of English, hampering their success in solving the exam questions. This has resulted in globally mediocre scores for the written examination.

We chose the questions in the oral exams for physics majors from a variety of fields, including classical mechanics, optics, electromagnetism, and quantum mechanics. We were careful to adapt our questions to the curriculum the examinee had pursued, as outlined in his or her application. For the physics minors, we chose questions adapted to either mathematicians (classical mechanics) or chemists (measurements of viscosity). In contrast to the written exam, the oral exams also test how well the examinee is able to process and implement hints given by the examiners in the course of solving a problem. Candidates should be mindful of taking full advantage of this interaction with the examiners. In particular, in case a candidate is uncertain about his/her understanding of a question or exercise, it is up to the candidate to formulate his/her doubts and obtain a clarification from the dialogue with the examiners. Obviously, such a dialogue requires a reasonably good command of a common language. This prerequisite was not met by a number of physics minors. In such cases, the candidates and the examiners struggled to communicate throughout the 45 minutes of the exam.

A very positive point was the successful numerical calculations undertaken by several candidates. Numbers are important in physics; finding a correct order of magnitude of, say, a moon radius favorably impresses the examiners.

Speed is an important element of appreciation of the jury, who will be more impressed by a candidate who advances quickly in an exercise towards the right solution than by a candidate waiting for help at each step. Nevertheless, the presentation of logical arguments and careful calculations should not suffer from attempts to impress by all means by speed. Appropriate timing of the solution of an exercise moreover goes hand in hand with a clear organization on the blackboard: Clearly legible and structured writing on the blackboard or whiteboard is not only appreciated by the examiners but also constitutes the best strategy for avoiding unnecessary calculational errors.

Finally, we are aware of the stress that the candidates experience in a situation that for many of them is quite unfamiliar. Nevertheless, it is mandatory for the candidate to master his/her stress, in order to allow the jury to perceive his/her true capacities. Most importantly, candidates should avoid self-censuring during the exam,   
even when they have the impression that a part of the exam did not go as they had wished: the jury is very well capable of appreciating difficulties related to particularly hard questions and will value logical reasoning even in a situation where the problem has not been fully solved by the candidate.

To be competitive, it is of uttermost importance to maintain full concentration over the whole duration of the examination time.