

The Preliminary Examination

CUA Physics Department

29 May 2009

The Preliminary Exam is given at the beginning of the fall semester each year, at a time and place to be announced at the beginning of the summer.

1) Who must take the examination?

All incoming students must take this examination at the start of their first year for diagnostic and placement purposes, and all students must pass this examination as one step in the process necessary to qualify to take the Ph.D. comprehensive examination. Any student who has not yet passed the preliminary exam must take it again at the beginning of each academic year. There is no limit to the number of times a student may attempt the preliminary examination. However, students who fail to pass the examination by the beginning of their third year may become ineligible for financial support.

2) What is covered by the examination?

The preliminary examination is a test of physics knowledge at the level studied by most undergraduate physics majors. The examination covers the areas of mechanics, electricity and magnetism, thermodynamics and modern physics/quantum mechanics, with questions at both the elementary (freshman-sophomore) and intermediate (junior-senior) levels. A list of “Concepts and Topics Expected to be Covered in Undergraduate Physics” is available (see below.)

3) What is the format of the examination?

No reference materials or calculators may be used during the examination, unless provided by the examination committee..

Prior to 2009, the four-hour examination consisted of two questions in each of the above four areas, typically with one question at elementary (freshman-sophomore) level and the other at intermediate (junior-senior) level.

Beginning with the Fall 2009 examination, the format of the examination has been changed to include a larger number of short questions to test a wider variety of basic concepts within the four-hour period. As before, the examination will cover the areas of mechanics, electricity and magnetism, thermodynamics and modern physics/quantum mechanics, with questions at both elementary and intermediate levels, so looking at previous exams is still a valid guide to the level of the material to be tested.

4) Some useful files (available from the Physics Department)

Sample_questions.pdf

Some sample questions in the new format.

Undergrad_concepts.pdf

A list of “Concepts and Topics Expected to be Covered in Undergraduate Physics”