Review for Midterm I
PHY 10 (Feb 5 2008)
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Basics:

Date of midterm: Tues Feb 5
Time: 9:00am-10:20am (normal class time)
Place: 55 Roessler (normal class location)
Bring: Your own bluebooks (*any size)* scantron sheet *(a blue UCD 2000 scantron)* from the bookstore. Also your own pens and pencils.
Calculators: May be helpful: Calculators only, no palm pilots, cellphones or other equipment with additional capabilities.
Your own notes/books: **Not permitted**
Equations: All equations required will be provided on a special section of the exam sheet. However, they will not be labeled in any way.
Fundamental constants: You will not be required to memorize any of these.
Conversion between units: Some will be provided on the exam. You may also ask about these during the exam. You are not expected to memorize conversion between units.

Types of Questions:

- The exam will consist of two parts, each carrying approximately equal weight. The first part will be multiple choice, and the 2nd part will be short answer.

- I might ask you to remember facts from lecture or the reading, to use and interpret the key equations. (such as which direction of motion causes redshift vs blueshift)

Summary of Assigned Reading: Available on the course web site.

Study Guide:

1) Make sure you can do and understand each homework problem. (The exam will emphasize material related to the homework problems.)

2) Make sure you have done all the assigned reading, and reviewed your lecture notes. *You are not expected to remember details from the reading that do not relate to topics covered in class or on the homework. Focus on the parts of the reading that are related to topics on the homework or lectures.*

3) The "formation of nuclei", "dark matter and dark energy" and "microwave background/edge of the observable universe" topics will be covered on later exams (after I have discussed them more thoroughly). They will not appear on midterm 1.

4) Important equations to understand:

- Emitted power per unit area of a blackbody and the expression for the wavelength at maximum intensity (λ_{max}). You can read about these in Math Insight 5.2 on p.165

- The relationship between light frequency, wavelength, and the speed of light.
- Photon energy as a function of wavelength
- Photon energy as a function of frequency
- Doppler shift equation
- Also: You should have a *qualitative* understanding of the blackbody radiation law (as depicted, for example, in Fig 5.19). What happens to the blackbody spectrum as the temperature increases/decreases? When does it look "red" or "blue" to the eye?
- The Hubble Law
- The inverse square law of radiation

Regarding the equations: Be prepared for questions like:

If the wavelength of a photon doubles, the Energy

a) Doubles

b) Increases by 4

c) drops to half the original value

d) goes to zero

(answer: c))

Such questions require you to use the equations, but do not require the use of a calculator (but you may use one anyway if you like).