ASTR100 Fall 2009: Exam #2 Review Sheet

EXAM IS THURSDAY, NOVEMBER 5th, chapters 5-11

Resources available

A] http://www.astro.umd.edu/~ssm/ASTR100/ has some useful links.

B] **Read the book!** Try the problems at the end of each chapter.

C] Email me if you have a specific question I could answer online.

D] Come to Wednesday office hours if you need general help/review.

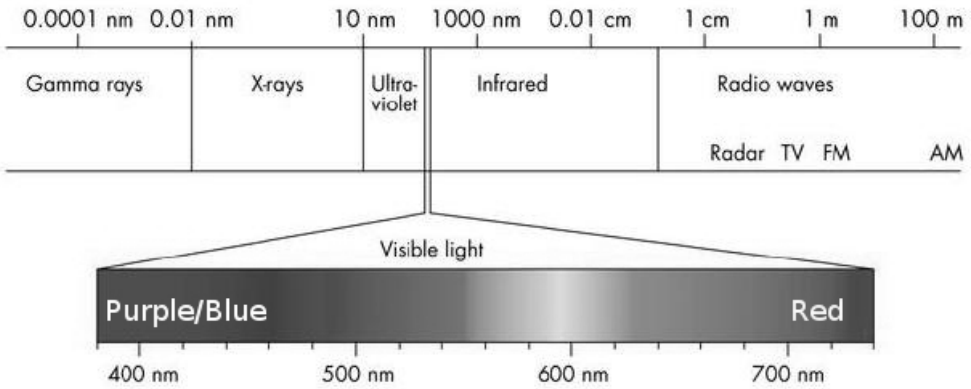
Chapter 5: Light

1] What type of EM radiation has the longest wavelength?

_____

2] What type of EM radiation has the highest frequency?

_____



3] What color of visible light has the most energy? _____ Why? _____

4] Name the four ways light interacts with matter: _____, _____, _____, _____.

5] What type of spectrum will a neon light produce? _____

6] What type of spectrum will a regular filament light bulb produce? _____

7] What type of spectrum will a star produce? _____

8] Why do atoms absorb/emit only certain values of energy? _____

9] If you double a star's radius and change nothing else, by how much will its luminosity increase? (Use ratios and Stefan-Boltzmann Law) _____

10] If a star has twice the peak wavelength of emission as our Sun, is it hotter or colder at the surface? By how much? (Use Wien's Law) _____

11] If a star's spectrum is blue shifted, is it moving towards or away from us? _____

12] What does a reflecting telescope look like? How about a refracting one? (Sketch:)

(Reflecting:) | (Refracting)

13] Name three advantages of putting a telescope in space. _____, _____, and _____.

14] For the same size telescope, which has a better angular resolution: a telescope that picks up infrared or one that picks up ultraviolet? ($\theta \propto \lambda/D$) _____

Chapter 6: The Solar System

1] Pages 146-155 have one planet per page. How far from the Sun is Neptune? _____

2] What are some clues that help us figure out how the Solar System formed? (Page 157 may prove useful) _____

3] List these in order from closest to furthest from the Sun: Kuiper belt, asteroid belt, jovian planets, Oort Cloud, terrestrial planets. _____

_____

4] Describe the Solar Nebula hypothesis: _____

_____

_____

5] How do we find extrasolar planets? Name some techniques (See pages 175-177):

_____

_____

Chapter 7: Earth and Terrestrial Worlds

1] There are four main factors that affect surfaces. Name them: _____, _____, _____, _____. Which of these are found on Venus? _____

2] Name some unique features of Earth that support life (Page 216 is helpful). _____

_____

3] Describe the CO_2 cycle on Earth: _____

_____

Chapter 8: Jovian Planets

1] What are Saturn and Uranus primarily made from? _____

2] Why do Neptune and Uranus look blue? _____

3] What causes Io to heat up enough to be volcanically active? _____

4] Which planets have rings, and what are they made of? _____

_____

Chapter 9: Asteroids and Comets

1] Where are comets typically found? _____

2] Describe the difference between a meteor, a meteorite, and a meteoroid: _____

_____

3] There are two tails on a comet. What are they made out of, and which always points DIRECTLY away from the Sun? _____

_____

4] Name three famous/important examples of impacts in the Solar System and where they occurred (Hint: catastrophic events are a good place to start) _____

_____

_____

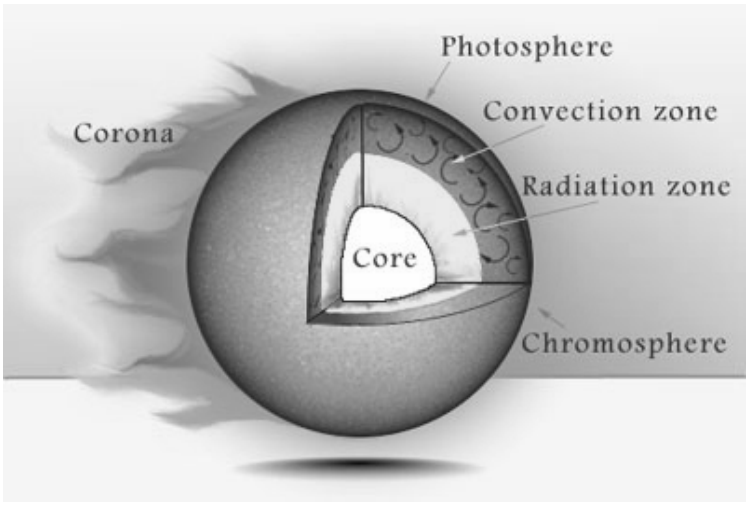
_____

Chapter 10: The Sun

1] Google the song "Why does the Sun Shine?" by They Might Be Giants. The lyrics are catchy and pretty accurate. Maybe they could help on the exam!

2] The visible "surface" of the Sun is called the _____.

3] Describe the steps of the proton-proton chain below (should be covered in class on Tuesday):



4] What happens to the Sun's magnetic field every 11 years? _____

Chapter 11: Stars

1] Suppose we know two stars have the SAME luminosity, but one looks four times brighter than the other. How much closer is it? (Use the inverse-square law and ratios):

_____

2] Which is hotter, our Sun or a Red Giant? _____

3] Know the Hertzsprung-Russell Diagram well. There will likely be a free response question asking about many details regarding it. (P. 319)

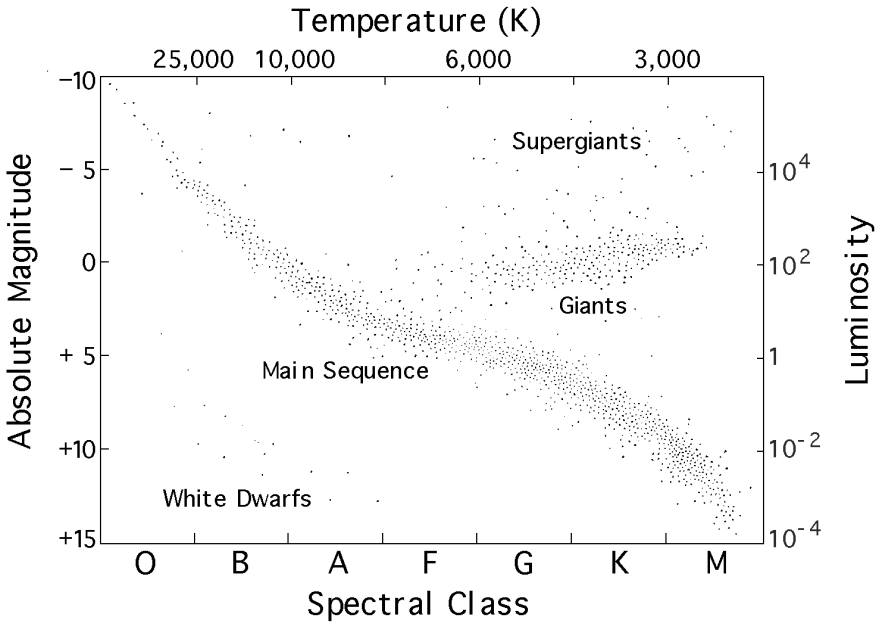
4] What spectral class is the Sun? _____

5] What color are K and M stars? _____

6] What spectral class of stars has the shortest life-span? _____

7] Along the main sequence, where are the highest-mass stars found? _____

8] Describe the statement "Mass is destiny." _____



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