

ASTR 340 - Origin of the Universe 85 points

HOMEWORK #1 (Th Feb 5 2015)

due date: Thursday Feb 12 in class

READING: read Chapters 1 and 2 of the text.

All of the answers are in the textbook (or can be obtained from figures in the textbook)- I did not cover all of this in detail in the lectures.

You can hand the homework in as either/and/or 1) handwritten on paper, 2) Word 'processed' on paper 3) email to **Kyle Elliott** : kelliott2@terpmail.umd.edu

1 Parallax of Proxima Centauri [25 pts, 5 pts each question]

- a) Explain in your own words (or draw a diagram) explaining what is parallax.
- b) The star nearest to the sun, Proxima Centauri, has annual parallax angle of 0.772 arcsec. How far from the Sun is it? Give your answer in parsecs* or light-years.
- c) Estimate the annual parallax of a star distant 10 parsecs from the Sun.
- d) Calculate the diurnal parallax of the moon- this is tricky, make an assumption that the moon is not moving in its orbit to calculate this. .
- e) Did Tycho have any chance of measuring the parallax of Proxima Centauri or any other star?

2 Motion according to Aristotle [10 pts]

Aristotle believed that terrestrial objects naturally come to rest, and in order to maintain a constant state of motion a force must constantly be applied. What logical arguments and common-sense observations could you use to get him to change his mind?

3 Copernican revolution [20 pts]

- a) Why didn't the idea of the heliocentric model become accepted for more than 1700 years after being proposed in the 3rd century BC by Aristarchus of Samos [5pts]
- b) What led Copernicus to abandon the geocentric model? [5 pts]
- c) List three attractive features and three weaknesses of the Copernican model as perceived by his fellow scientists (I mean in the context of his time).[10 pts]

4 Creation Myths [20 pts]

Research on the web or at the library about a creation myth of an other civilization, **not** discussed in our textbook. Write a short summary of what you learned (<1 page) highlighting links between their myth and what the Greeks or one of the other ancient civilizations discussed in the textbook thought..

5 Name and explain the main properties of a scientific hypothesis according to the scientific method. [10 points]

***Parsec was discussed in class see page 285 of text book.**