

Name: _____

**HNRS 228 Spring 2005
Examination #1**

Short Answer Questions (point value indicated for each):

1.(2pt) You have 16 grams of a radioactive element with a half-life of two years. How many grams of the original element remain after six years? Show your work.

_____grams

2.(2pt) Show how you would calculate the distance in a light year (do not do the calculation, just show how you would do it)?

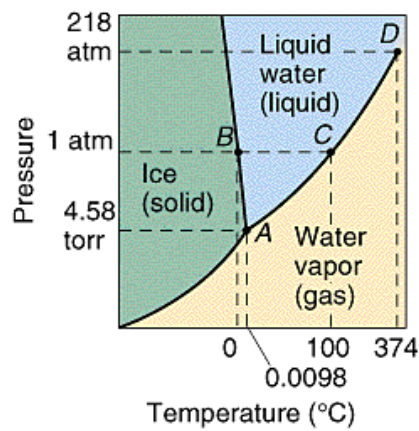
3.(2pt) What is an Astronomical Unit and its significance?

4.(2pt) What would you say if someone asked you where is the center of the universe?

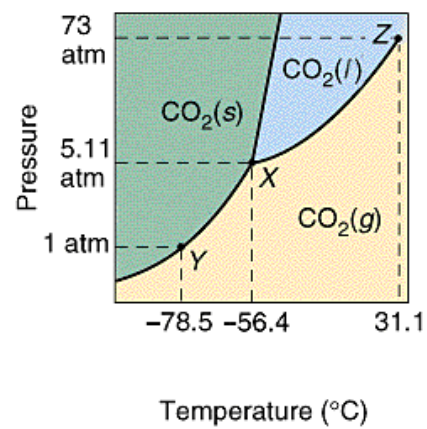
5.(4pt) Describe the Miller-Urey experiment and its significance?

6.(4pt) What physical characteristics change when a nebula collapses to form a star?
Describe in what manner they change (larger, smaller, faster, slower, colder, hotter).

7.(2pt) Using the proper phase diagram from those provided, what phase would carbon dioxide be at a temperature of -78.5°C and an atmospheric pressure equivalent to two times that of Earth's at sea level?



(a)



(b)

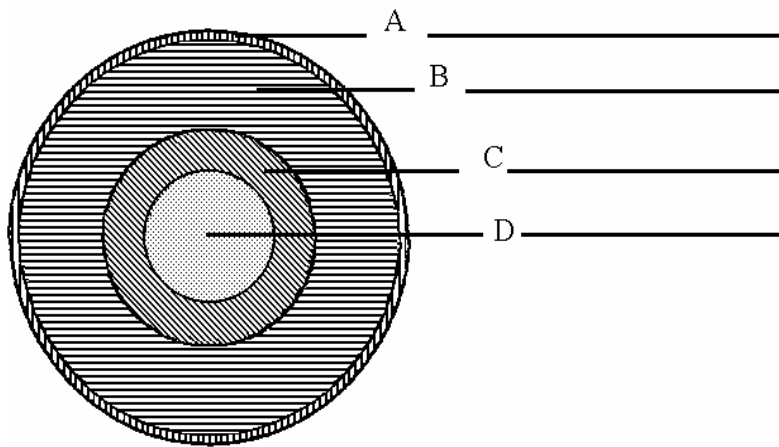
8.(4pt) Explain why Earth possesses few visible craters and the Moon possesses many?

9.(4pt) Describe the major steps in the scientific method?

10.(4pt) What are common features characterizing major extinction events in geological history?

11.(2pt) Name all the constituents of an atom's nucleus?

12.(4pt) Fill in the names of each of the layers of the Earth (using the diagram below).



Earth's Interior

13.(2pt) How would you define life?

14.(2pt) Describe the difference between anaerobic and aerobic organisms.

- 15.(2pt) What is meant by “valence electrons”?
- 16.(2pt) What is meant by the term “igneous rock”?
- 17.(2pt) What is meant by the term “extremophile”?
- 18.(2pt) What is meant by the term “metamorphic rock”?
- 19.(2pt) What is meant by the “Copernican revolution” and what was its significance?
- 20.(2pt) What is meant by “absolute dating” and what is the physical basis of it?

- 21.(2pt) What is meant by “relative dating” and what is an example of it?
- 22.(2pt) What is meant by eukaryotes?
- 23.(2pt) What is meant by the “pH scale”?
- 24.(2pt) At standard temperature and pressure on the surface of the Earth, water is a liquid in the range of _____ ⁰K.
- 25.(2pt) What is meant by “panspermia”?
- 26.(4pt) What is meant by the “Big Bang Theory”?

- 27.(4pt) What is meant by the “Nebular Condensation Theory”?
- 28.(2pt) Describe three different ways that scientists can search for life on planets in our solar system.
- 29.(4pt) What is meant by the “Miller-Urey experiment”?
- 30.(4pt) Define enzymes and their significance?

31.(4pt) What is astrobiology and its goals?

32.(4pt) Where in our solar system might you find microbial life? (Give brief reason why for each location.)

33.(4pt) Why is water so important to life?

34.(4pt) Define evolution and its significance?

35.(2pt) Define DNA and its significance?

36.(2pt) Define RNA and its significance?