

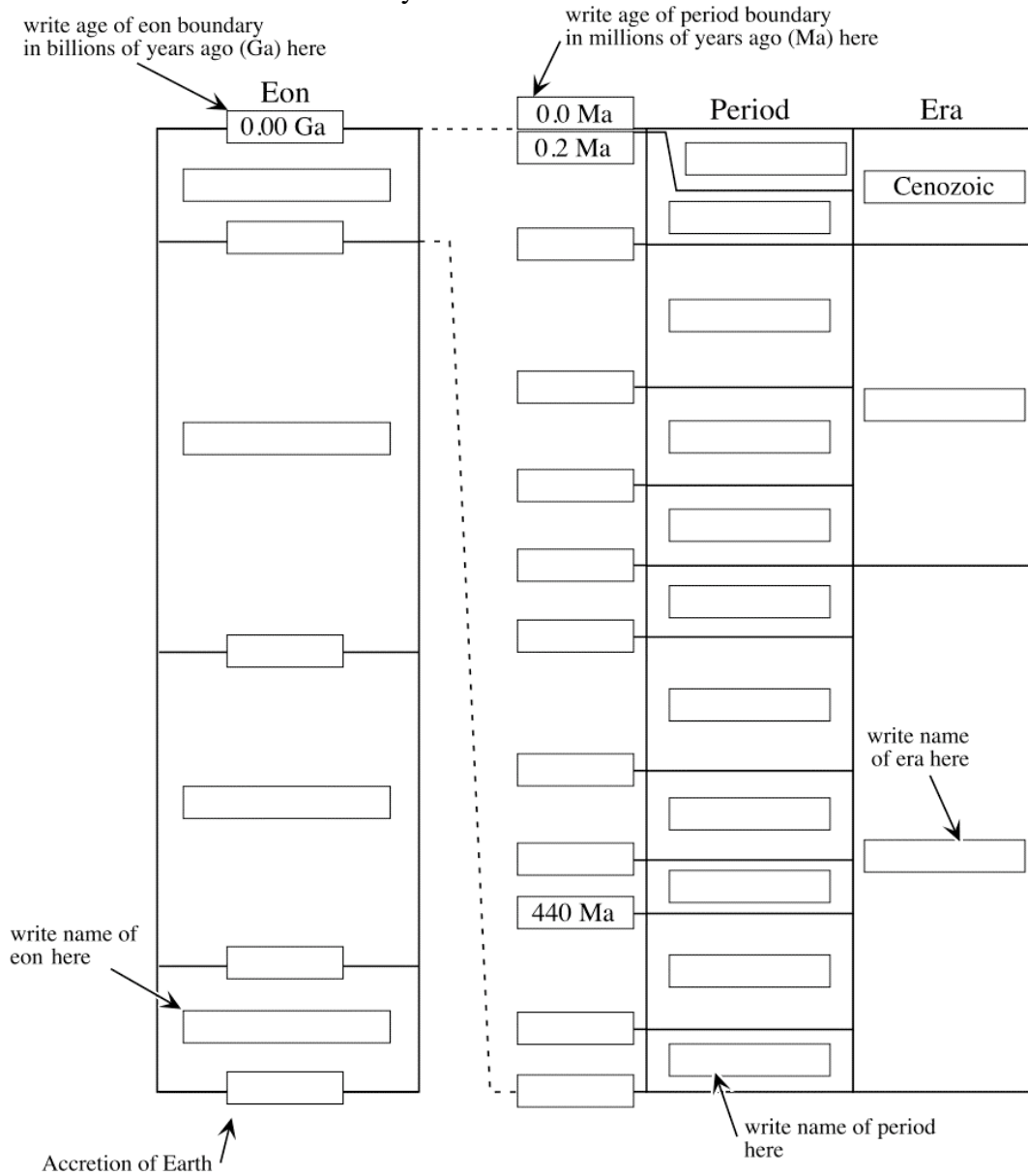
THE LIFE SYSTEM - EESC 2300y & ENVB 2002y - 2007

SHORT ANSWER EXAM 1 – examples of questions

You will have the full period to complete this exam. There are **four** parts to this exam totaling 100 pts.

These specific questions may or may not be on the exam, except Part I, which definitely will be on it. Apart from Part I, there will be more questions than on this example.

Part I: The Geological Time Scale. Fill out the framework below being sure to put something in each box, either a boundary date or the name of the time period, as indicated. I have supplied you with a few reference answers to orient you.



Part II: Short answer.

1. Fill out Life's structural hierarchy below (only five levels are needed, although you may put more).
2. Briefly describe the surface area to volume relationship.
3. Define a Key Evolutionary Innovation.

Part III: Multiple Choice. Circle one of the letters.

1. The basic photosynthetic reaction is:
 - a. Carbon dioxide + carbohydrate + sunlight = water + oxygen
 - b. Carbon dioxide + water + sunlight = carbohydrate + oxygen
 - c. Oxygen + water + sunlight = carbohydrate + carbon dioxide
 - d. Carbon dioxide + oxygen = carbohydrate + sunlight + water
2. What large-scale events are known to have occurred at or very close to the Permian-Triassic boundary, the Triassic-Jurassic boundary, and the Cretaceous-Tertiary boundary.
 - a. Mass extinction events.
 - b. Key Evolutionary Innovations that dramatically changed ecosystem function.
 - c. Giant asteroid impacts.
 - d. Massive sea-level drops that wiped out most shelly animals.
3. The $\delta^{13}\text{C}$ (delta C thirteen) curve through the Phanerozoic is mostly indicative of....
 - a. The relative amount of organic carbon burial through time.
 - b. The amount of recycling of inorganic carbon in the biosphere through time.
 - c. The relative amount of chemical weathering over time.
 - d. All of the above.

4. The Agronomic Revolution was:

- a. The spread of agriculture during the last 6000 years.
- b. A uprising cause by a fear of the marketplace.
- c. Caused by the evolution of burrowers that churned and oxidized marine sediment.
- d. A symbiosis between social insects and the fungi and green plants they farm.

Part IV. True or False. Circle TRUE or FALSE.

1. A plant is defined as a photosynthetic multicellular organism.

TRUE FALSE

2. The present day is the only time in Earth history that life has been subject to an extremely rapid rise in CO₂.

TRUE FALSE

3. Eukaryotes are symbiotic colonies of prokaryotes.

TRUE FALSE

4. The abundant O₂ in the Archean atmosphere was a necessary prelude to the origin of life.

TRUE FALSE