

Biology 375 – Evolution
Fall 2007 – Dr. Carey – Exam 4

1. Define: (3 pts each)
 - A. stromatolites
 - B. trilobite
 - C. adaptive zone

2. What is the Cambrian explosion? When did it occur? Why would it be unlikely that this represents the ultimate origin of such fossils? Describe one hypothesis often given as an explanation as to why this event occurred. (20 pts)

3. What is it about modern membranes that make it unlikely that the first membranes around living things were similar? Define microspheres and coacervates. What sorts of characteristics do they have that might make them useful analogs for the study of early membrane possibilities? (18 pts)

4. What is a primordial soup? Does it exist today? If so, explain where and how it continues to exist. If not, give a possible reason why it disappeared? (12 pts)

5. Why is DNA unlikely to have been the 1st reproductive mechanism in lifeforms? What is a more likely organic possibility for a 1st reproductive mechanism? What sort of evidence exists to support this alternative possibility? (15 pts)

6. Fill in the blanks in the following questions: (1 pt each blank)
 - A. There is some argument over what might be the 2nd largest mass extinction in the fossil record. Some say it marked the boundary line between the _____ and _____ periods about _____ million years ago. Because this occurred so long ago, evidence is scanty for this view, and thus it is not the majority viewpoint. Most think the 2nd largest extinction event occurred at the boundary between the _____ and _____ periods about _____ million years ago. Two major groups of animals that disappear completely in this extinction event are the _____ and _____.

 - B. Recent evidence indicates that the 1st vertebrate fossils are found in rocks dating to the _____ period. They are now known to be a common group of fossils called _____ because of their well fossilized toothlike structures.

- C. Fossil members of the human family Hominidae make their 1st appearance in the fossil record about 4 million years ago in the _____ epoch. Appearance of the genus Homo in the fossil record marks the beginning of the _____ period. Another event associated with this period is _____. The latest date in this period is _____.
- D. Tree-like plant organisms become very common during the _____ period. These early trees are a type of plant called _____. Modern broadleaf trees are mostly in a phylum of plants called _____. This type plant makes its 1st appearance in the record during the _____ period.
- E. The oldest known multicellular fossils were 1st discovered in Australia and named the _____ after a nearby town. Most consider these fossils to be members of the kingdom _____, although some recent analysis has placed some of them in the kingdom _____. This entire fossil assemblage goes extinct from the record about _____ million years ago.
- F. Uranium oxide evidence indicates that the atmospheric oxygen concentration passed the _____ level about _____ billion years ago.
- G. _____, mammal-like reptiles, 1st appear in the fossil record in the _____ period. The best current evidence indicates that the 1st true mammal fossils appear in the record during the _____ period.