

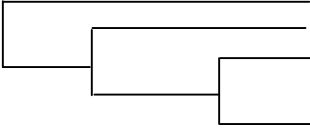
Practice questions for IB 201 midterm Sp 06

The exam will encompass material from the last 9 lectures. You should review assigned readings, class outlines/notes linked to your lecture schedule, notes you took in class, ppt slides and homework. Review the terms. The exam will be worth **125 points** and you will have a full class period (80 min) to complete the exam. As stated on the web pages for the course under the heading “Exams”, “There will be NO MAKEUP EXAMS.” Only if you have a medical or personal emergency might an exception be granted.

The following questions will give you an idea of the style of some questions for the exam. There will be some in which you fill in the blank with the correct term recalled from memory, some in which you will have a selection of possible answers provided and you pick the correct one (as in quizler), and some in which you match a term to a definition or a scientist to a given scientific discovery or evolutionary insight. You will have a selection of questions on the last page, from which you will provide answers for 2. These short-answer questions will be in two groups and you will select one from each group.

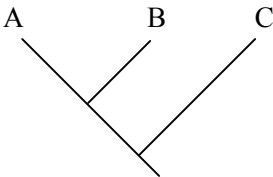
A. From the following terms, select the correct one to complete the sentences below. There are more terms than sentences so not all are used, and some terms might be used more than once.

analogous	multi-copy gene family
apomorphic	outgroup
arthropods	phenotypic plasticity
bilateral	phylogram
chordates	plesiomorphic
cladogram	radial
DNA	ribozyme
echinoderms	RNA
guinea pigs	sister group
ingroup	symmetrical
mitochondrial gene	sympatric
monophyletic	synapomorphic

1. _____ characters are used to establish monophyletic groups.
2. Hennig identified a certain class of characters that were not useful for establishing phylogenetic relationships; these he called _____ characters.
3. If a tree diagram portrays information about branch length, representing the number of evolutionary changes along the branch, it is called a _____.
4. The tree to the right is called a _____.

5. There is mounting evidence that the earliest self-replicating molecule was composed of _____.

6. A _____ can be used with some success to root the universal tree of life.
7. Radial symmetry appears to be secondarily derived in some of the _____.

B. Select the appropriate answer from the list beneath each question

1. This tree  can be represented as

- a) $((B+A)(C))$
- b) $(A(C+B))$
- c) $(C+B)(A)$
- d) (CAB)
- e) (ABC)

2. The endosymbiont theory of cell evolution postulates that mitochondria were once free living members of the taxon _____.

- a) Archaea
- b) Fungi
- c) Bacteria
- d) Eucarya
- e) Cyanobacteria

3. _____ symmetry is a property of the protostomes and deuterostomes.

- a) duplicated
- b) baupläne
- c) bilateral
- d) radial
- e) L- and D-

4. The extant chordate organism thought to share a common ancestor with all the rest of the chordates is _____.

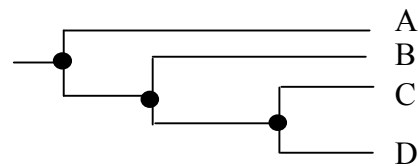
- a) Chordata
- b) Trilobita
- c) Radiolaria
- d) *Amphioxus*
- e) Proteobacteria

5. A pattern of evolution seen in both the fossil record and in the reconstruction of phylogenies with data from DNA reveals that major evolutionary change can occur very rapidly and remain slow or even static for a very long time. This pattern is known as _____.

- a) gradualism
- b) descent with modification
- c) gigantism
- d) adaptive radiation
- e) ecological adaptation

6. From the diagram below you can conclude that

- a) A is ancestral to B, C, and D.
- b) B is more closely related to A than to C and D.
- c) C is more closely related to B than to A
- d) B is the sister group to A
- e) A is older than B, C and D.



C. Questions from which to select could include:

1. Label the tips with the appropriate taxa as they are known to be related on the metazoan tree (I'll provide the tree) and map the principal synapomorphies that unite the major groups.
2. Name the two principal hypotheses concerning the movement of humans out of Africa and describe the differences between the hypotheses. What does each suggest in terms of the behavior of colonizing humans.