

Invertebrate Zoology- Fall 2010
FINAL EXAM- First Hour (midterm 3)

You have one hour to complete this portion of the exam. After one hour your paper will be collected and you will be given the second portion of the exam. If you finish this portion early, you may request the second portion before the end of the first hour. However, you may not look at this portion again.

Read through this exam before you begin. It consists of four (4) parts. You must answer each part, however, in each part you are required to answer only a subset of the questions. If you answer more questions than indicated in any part, your answers will be graded in order, and you will be graded only on the number of questions indicated. Feel free to use labeled diagrams liberally.

Part I. Answer nine (9) of the following twelve (12) questions: (18 points; 2 points each)

1. Identify a chordate subphylum to which we do NOT belong.
2. Identify a phylum with less than 1,000 extant species all of which possess 4 pairs of clawed legs and 1 pair of antennae.
3. The thyroid gland of vertebrates is considered to be homologous with endostyle of members of what class?
4. Identify an unshelled "lophophorate" phylum the members of which are entirely marine and are never colonial.
5. Identify the invertebrate phylum that is the most problematic of all metazoan phyla to place in a phylogenetic context.
6. Identify a "lophophorate" phylum that includes some freshwater species and also species that undergo both sexual and asexual reproduction.
7. The stomochord of what class of invertebrates was once confused with the chordate notochord?
8. Identify the internal structure(s) that serves as the primary organ of respiration in the echinoderm class that spends its adult life lying on its side.

4. pharyngeal basket:

Phylum/Class:

5. paxillae:

Phylum/Class:

6. glomerulus:

Phylum/Class:

7. madreporite:

Phylum/Class:

8. statoblast:

Phylum/Class:

9. Cuvierian tubules:

Phylum/Class:

10. mutable collagen:

Phylum/Class:

11. malpighian tubule:

Phylum/Class:

Part III. Answer 8 of the following 12 questions (48 points; 6 points each).

1. Compare and contrast (i.e., describe similarities and differences between) a “regular” and an “irregular” echinoid.

2. Select 3 classes of echinoderms and describe respiration in each.

9. Compare and contrast (i.e., describe similarities and differences between) the 3 phyla considered to be lophophorates. Be certain to name each phylum; you may find it best to present your answer in the form of a table.

10. Illustrate the orientation and location of the oral and aboral surfaces of each of the 5 echinoderm classes. In each case also indicate the general location of the tube feet.

PART IV. Complete 20 of the 26 blank cells in the following table of invertebrate life cycles and larval types. Note: each row must involve a DIFFERENT larval form. (20 points)

TAXON (phylum or class)	Includes greater than 900 species (± 50) (yes/no)	includes freshwater species (yes/no)	free swimming adult stage (yes/no)	Larval stage (write NONE if development of all included species is direct)
Hemichordata	no	no	no	
		no	no	auricularia larva
Thaliacea		no		
Echinoidea		no	no	
Brachiopoda			no	
Ophiuroidea		no	no	
Asteroidea	yes		no	
Enteropneusta		no		
				NONE
Bryozoa				

