

Invertebrate Zoology
Midterm Exam I- Fall 2008

Read through the exam before you begin. This exam consists of four (4) Parts. You must provide answers for each Part. However, you are required to **answer only a SUBSET of the questions (terms, etc.) in Parts I-III. You must answer all 5 of the questions in Part IV.** If you answer more questions than indicated in the instructions provided at the beginning of Parts I-III, your answers will be graded in order, and you will be graded only on the number of questions you are required to answer. Feel free to use diagrams liberally.

Part I. Describe one *similarity* and one *difference* between 5 of the following 8 pairs of terms. Be sure to indicate which condition applies to which term. (20 points; 4 points each)

1. diploblastic vs triploblastic

2. choanocyte vs. choanoflagellate

3. protist vs. animal

4. meiofauna vs. epifauna

5. cnidarian vs. ctenophoran

6. neodermis vs. epidermis

7. asconoid vs. leuconoid

8. acoelomate vs. blastocoelomate

Part II. Answer 6 of the following 11 questions (36 points; 6 points each).

1. Identify a synapomorphy for each of the following taxa.

a. Cnidaria:

b. Cestoda:

c. Nematoda:

d. Ciliophora:

5. For each of the following phyla, list an organ or structure that is **mesodermal** in origin.

a. Nematoda

b. Platyhelminthes

c. Loricifera

d. Rotifera

6. Describe the function of each of the following structures/cell types.

a. mastax in rotifers

b. gastrovascular cavity in *Hydra*

c. pinacocytes in poriferans

d. adhesive tubes in gastrotrichs

7. Describe the role (if any!) that undulopodia/cilia play in the each of the following taxa.

a. Lobosa

b. Parabasalia

c. Rotifera

d. Kinorhyncha

8. Indicate which of the following taxa include colonial species by placing YES next to those that do, and NO next to those that include only solitary taxa.

a. Scyphozoa _____

b. Entoprocta _____

c. Rotifera _____

d. Gnathostomulida _____

9. List 4 phyla of invertebrates that include more than 10 described species and rank them in order from 1 through 4 based on the number of species they are currently thought to include. (Use 1 for the most speciose phylum and 4 for the least speciose)

Phylum	Diversity Rank
_____	_____
_____	_____
_____	_____
_____	_____

10. a. Describe 3 distinguishing characteristics of a kinorhynch.

b. Where would you expect to find a live kinorhynch?

11. Provide an example of a phylum that includes at least some species that fulfill each of the following sets of criteria.

a. animal with biradial symmetry _____

b. diploblastic with tentacles _____

c. monoecious with ventral cilia _____

d. resides on lobster mouthparts _____

Part III. Answer 6 of the following 9 questions about specific invertebrate groups. (24 points; 4 points each)

1. List 3 classes of Cnidaria and for each class indicate whether a medusoid stage is present in the life-cycle.

a.

b.

c.

2. Describe 3 differences between a nematode and a nematomorph.

a.

b.

c.

3. Describe 3 differences between the proboscis of a nemertean and that of an acanthocephalan.

a.

b.

c.

4. Describe how an axopodium differs from a reticulopodium.

5. Describe 3 differences between mictic and amictic rotifer females.

a.

b.

c.

6. Describe water flow through an asconoid sponge.

7. Select a phylum of triploblastic metazoans and describe how the majority of its members handle the body functions listed below:

Phylum: _____

a. excretion:

b. digestion:

c. reproduction:

d. locomotion:

8. Describe 3 differences between the outer layer(s) of the body of a nematode and those of a monogenean.

a.

b.

c.

9. Describe the life cycle of *Aurelia*.

Part IV. Use the following list of invertebrate life-cycle stages to answer ALL 5 of the questions given below. (20 points; 4 points each)

ephyra	sporocyst	cysticanth
miracidium	loricate larva	strobila
amphiblastula	cydippid larva	onchosphere
planula larva	cotylocidium	cercaria
scyphistoma	Mueller's larva	acanthor
acanthella	pilidium larva	redia
chordoid larva	redia	J-4

From the above list:

1. Identify 4 life-cycle stages that use cilia (or at least short undulopodia) as their main mode of locomotion.

- a.
- b.
- c.
- d.

2. Identify 4 life-cycle stages that are parasitic.

- a.
- b.
- c.
- d.

3. Identify 4 life-cycle stages that are found in only a single phylum (in each case identify that phylum).

- a.
- b.
- c.
- d.

4. Identify 4 life-cycle stages that are produced by sexual reproduction.

- a.
- b.
- c.
- d.

5. Identify 4 life-cycle stages that are conspicuously different in form than their corresponding adult stage.

- a.
- b.
- c.
- d.