Invertebrate Zoology
Midterm Exam 1- Fall 2012

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-IV**. If you answer more questions than indicated in the instructions provided for each Part, 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 SIMILARILY and one DIFFERENCE for 5 of the following 8 pairs of terms. In each case, be certain to indicate which feature represents a similarity, and which represents a difference. (4 points each; 20 points total)

1. diploblastic vs. triplobastic

similarity:

difference:

2. Cubozoa vs. Scyphozoa

similarity:

difference:

3. "turbellarian" vs. neodermatan

similarity:

difference:

4. priapula vs. hexactinellid

similarity:

difference:

5. Digonata vs. Rhabditea

similarity:

difference:

6. epidermis vs. ectoderm

similarity:

difference:

7. Hydrozoa vs. Entoprocta

similarity:

difference:

8. gastrovascular cavity vs. spongocoel

similarity:

difference:

Part II. For 9 of the following 13 sets of features identify the Phylum, Subphylum or Class that is BEST characterized by the features provided. (2 points each; 18 points total)

1. Primarily marine, unicellular, with radial symmetry and axopods. _____

2. Includes blastocoelomate species fond of vinegar and German beer (mats). _____

3. With a mastax (enough said!) _____

4. Unknowingly of great importance to ancient Egyptian builders _____

5. "To be or not to be a coelomate, that is the question"…but some with a pilidium larva.
_____

6. Tiny "mud dragons". _____

7. With only one (albeit very cold) tiny jawed species. _____

8. Some with 6 tentacles, some with 8; all with polyps; none with medusae. _____

9. With colloblasts and including some members that exhibit kleptocnidae. _____

10. Unicellular and with an uncanny resemblance to sponge choanocytes. _____

11. Acoelomates that include the Neodermata as well as a number of free living and invertebrate-associated species _____

12. With infraciliature, a cytostome, and dikaryotic nuclei. _____

13. Named for the God of reproduction, Priapos. _____

Part III. Answer 7 of the following 12 questions (6 points each; 42 points total)

1. Using the list of taxa that follows, provide an example of each of the organisms described in parts a. through f. below; you may NOT use the same taxon twice.

Obelia	Gnathostomulida	*Planaria*
rotifer	tapeworm	*Metridium*
loriciferan	*Paramecium*	leuconoid sponge
ctenophoran	*Amoeba*	priapulid
Aurelia	ciliate	aspidogastrean

a. bi-radially symmetrical metazoan: _____

d. multicellular but lacks true tissues: _____

e. with a tiny "girdle": _____

f. acoelomate with short undulopodia: _____

2. List 4 phyla of **animals** that presently include LESS than 200 species.

a. _____

b. _____

c. _____

d. _____

3. Select a blastocoelomate phylum of invertebrates and describe how the majority of its members conduct each of the functions listed below:

   Phylum: _____

   a. reproduction

   b. locomotion

4. Dennis has been at it again…collecting things. He has the following 3 samples. Identify the type of aquatic environment (**i.e., marine or freshwater**) from which each of his samples was collected. However, if, based on the information provided, the sample could have come from **either** of these environments, indicate so. The samples are NOT mixtures from both environments, but in 1 case, Dennis' sample includes specimens (parasitic or symbiotic) that he collected from animals within his sample. Identify this sample with a star.

   a. Sample 1: heliozoans, a cnidarian, a poriferan, and acanthocephalans

   b. Sample 2: gnathostomulids, micrognathozoans, and cubozoans

   c. Sample 3: nematomorphs, nematodes, and ciliophorans.

5. Using labeled cross sections, distinguish between an acoelomate and a blastocoelomate. Be certain to indicate the relative positions of the gut, body cavity (if appropriate) as well as all 3 embryonic germ layers.

6. **Name** and provide **distinguishing characteristics** for **3** classes of Cnidaria.

   a. Class:

   b. Class:

   c. Class:

7. Describe locomotion (and, if applicable, pseudopod form) in each of the following phyla:

   a. Lobosea

   b. Radiolaria

   c. Ciliophora

8. Metazoans exhibit a diversity of feeding modes (e.g., predation, suspension feeding, phagocytosis, etc.). Select 3 phyla of metazoans that illustrate 3 **different** modes of feeding and **describe how feeding is accomplished** in each. In each case be certain to name the phylum.

   a. Phylum:
   feeding mode:

   b. Phylum:
   feeding mode:

   c. Phylum:
   feeding mode:

9. The muscle cells of nematodes are particularly unusual. Describe, using a **labeled** diagram, the muscle cells of nematodes and what makes them so unique.

10. Using **labeled** diagrams illustrate water flow through the body of a syconoid sponge.

11. Using **labeled** diagrams as appropriate, distinguish between simultaneous and sequential polymorphism in cnidarians.

12. For each of the following structures/organs identify the embryonic germ layer of origin (i.e., ectoderm, etc.).

a. stomodeum of *Metridium* _____

b. trifucate gut of triclad turbellarians _____

c. entoproct cerebral ganglion _____

d. nematode testis _____

Part IV. Use the following list of invertebrate life cycle stages to answer the 5 of the 7 questions given below. You may use the same stage twice among questions **(20 points; 4 points each)**

ephyra	sporocyst	cysticanth	redia
miracidium	loricate larva	strobila	J-4
amphiblastula	cydippid larva	onchosphere	amictic egg
planula larva	cotylocidium	cercaria	chordoid larva
scyphistoma	Mueller's larva	parenchymula larva	J-3
acanthella	pilidium larva	metacercaria	acanthor

1. Identify 2 life cycle stages that are each found in DIFFERENT blastocoelomate phyla.

   a. _____

   b. _____

2. Identify 2 life cycle stages that are found in at least some poriferans.

   a. _____

   b. _____

3. Identify 2 life cycle stages that are found in at least some platyhelminths.

   a. _____

   b. _____

4. Identify 2 triploblastic life cycle stages that are NOT free swimming.

   a. _____

   b. _____

5. Identify 2 pelagic life cycle stages.

   a. _____

   b. _____

6. Identify 2 life cycle stages that possess short undulopodia (i.e., "cilia").

   a. _____

   b. _____

7. Identify 2 life cycle stages that are found in invertebrate groups that are NOT triploblastic.

   a. _____

   b. _____