Name KEY

**BIOL 151 – Introductory Zoology**
**Minot State University**
**Examination #4 Spring 2013**

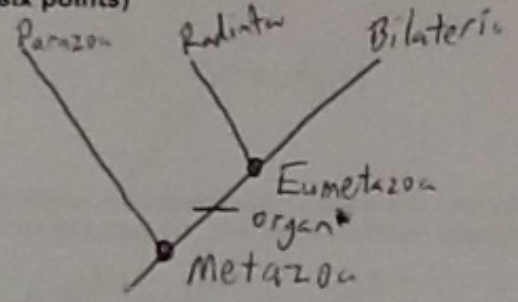
This is your fourth opportunity to earn points and show how much content you have assimilated regarding animal biology. This is the last hard exam; the final is easy. In this section of the course, we continued our coverage of animal diversity and form, specifically the cnidarians and the bilaterally symmetrical animals.

This exam has lots of trees. Please remember that a complete phylogeny includes the synapomorphies that define each appropriate branch. No autapomorphies or symplesiomorphies. Their inclusion will cost points. No extra taxa. Their inclusion will cost points. Except for #s 5, 6 and 10, I have kept the phylogeny questions simple by asking for trees where you will put names on all nodes.

There are 13 questions to answer, and each varies in the number of points. There are a total of 80 points to be earned on this exam. Feel free to use diagrams, figures and cartoons if they will help. Work quickly, yet carefully. If a one word answer is sufficient, then please don't write more than one word. You will need approximately 45 minutes to complete this examination, but you will have 65 minutes to do so. Do not use more space than is provided.

---

1. Provide a phylogeny that contains the following taxa: Metazoa, Eumetazoa, Radiata, Bilateria and Parazoa. **(six points)**




* -- others are possible

2. Name, draw, and/or outline the three ways in which protostomate and deuterostomate differ. **(eight points)**

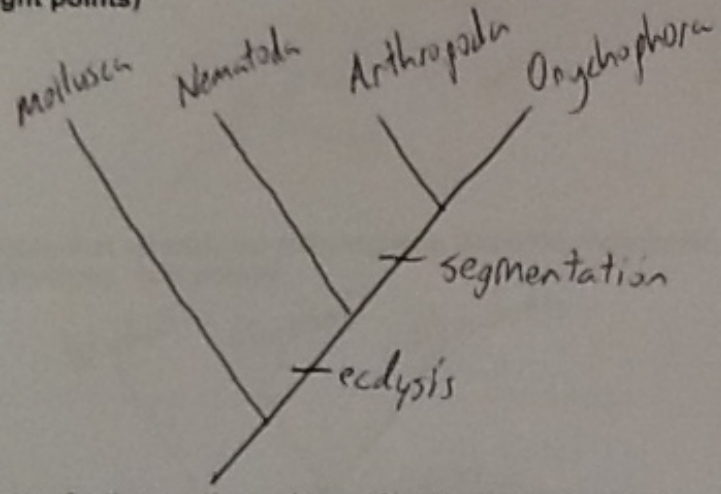
| | PROTO | | DEUTERO |
|---|---|---|---|
| (1) cleavage pattern: | spiral | vs. | radial |
| (2) fate of blastopore: | mouth | vs. | anus |
| (3) coelom formation: | schizocoelom | vs. | enterocoelom |

3. Which of the following taxa have a trochophore larva: Annelida, Mollusca, Chordata, Arthropoda, and Nematoda? **(six points)**

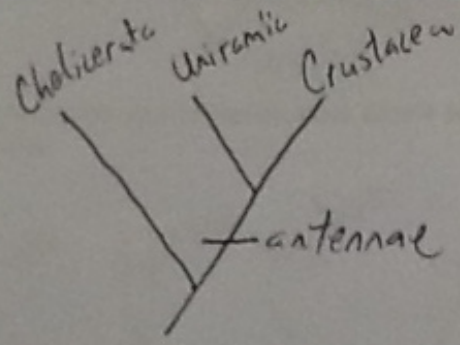
4. How does a blastocoelom (=pseudocoelom) differ from a coelom? **(six points)**

A coelom is completely lined with mesoderm and has mesentaries.

5. Provide a phylogeny that contains the following taxa: Onychophora, Nematoda, Arthropoda, and Mollusca. (hint: there are no node names for this tree, i.e., this tree has four branches) **(eight points)**



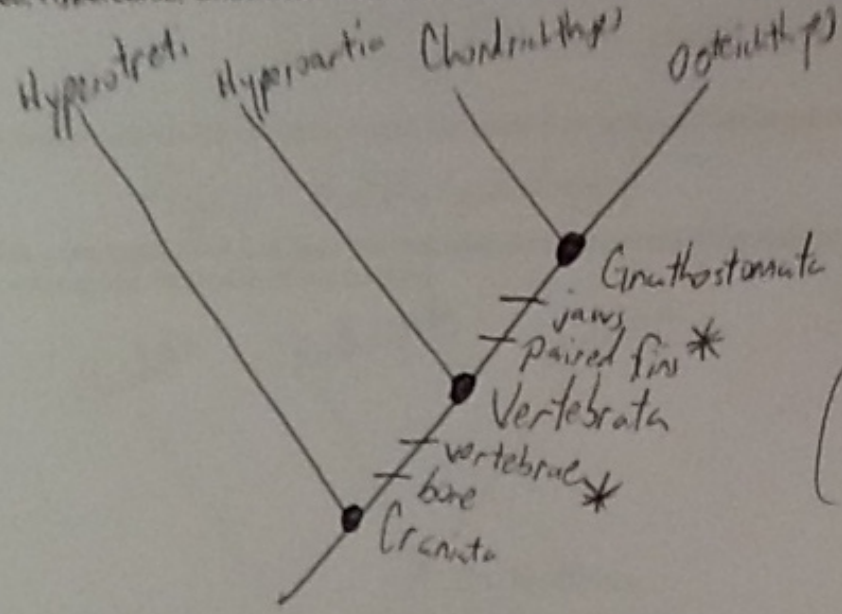

6. Provide a phylogeny for these arthropod taxa: Chelicerata, Uniramia, Crustacea. (hint: there are no node names for this tree, i.e., this tree has three branches) **(five points)**




7. What single feature accounts for the success of the arthropods? **(five points)**

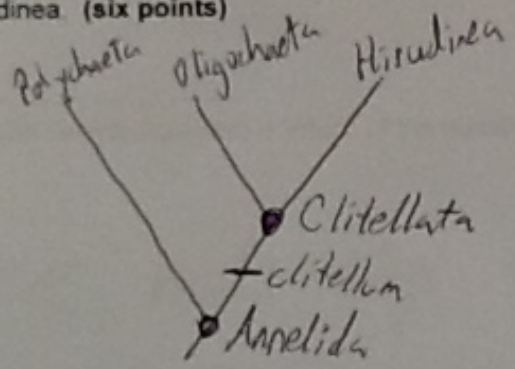
Chitin in exoskeleton (i.e., cuticle)

8. Provide a phylogeny that contains the following taxa: Craniata, Vertebrata, Hyperotreti, Hyperoartia, Gnathostomata, Chondrichthyes and Osteichthyes. **(eight points)**

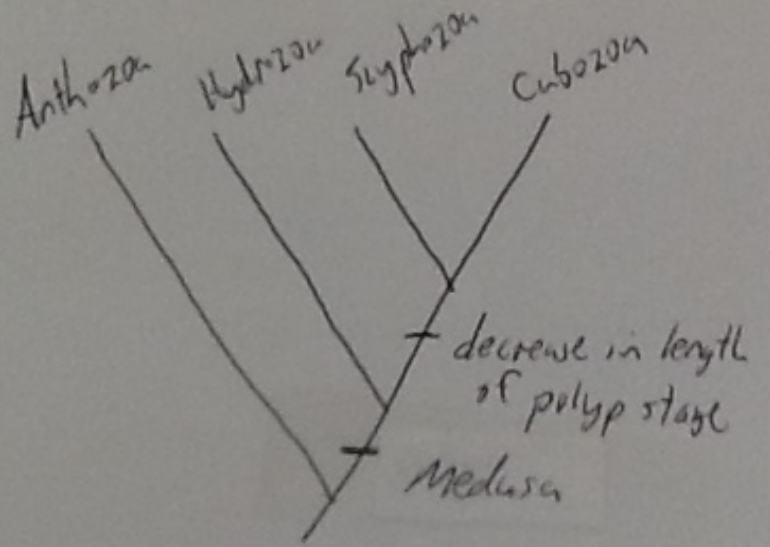



(* only one is necessary)

9. Provide a phylogeny that contains the following taxa: Annelida, Polychaeta, Clitellata, Oligochaeta, and Hirudinea. **(six points)**




10. Provide a phylogeny for the four cnidarian taxa. (there are no node names on this phylogeny) **(eight points)**



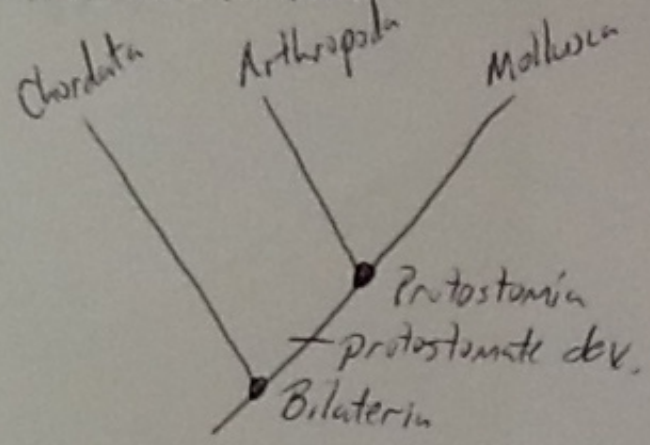
11. Describe the difference between the Sarcopterygii and the Actinopterygii. **(six points)**

have lobed fins with skeletal elements

12. What feature defines the Tetrapoda from the other Sarcopterygii? **(four points)**

fingers (= distal phalanges)

13. Provide a phylogeny that includes the following taxa: Chordata, Protostomia, Bilateria, Arthropoda, Mollusca. **(four points)**




---

**LAGNIAPPE QUESTION (worth 3 points)** – Which of the eumetazoan taxa have collar cells?

None, nada, zip, squat, zero, zilch...