

BIO 2135 - Animal Form and Function
Midterm examination
Worth either 10% or 15% of your final grade

Tuesday March 10, 2009

- a) Place your name and student number in the space provided below. Be sure that your name is on the top of each page because the exam will be separated to facilitate marking
- b) Circle the lab section for your lab.
- c) Check to be sure that your exam is complete with a total of 12 pages including this one
- d) Answer all questions in the space provided on the exam. Do not transfer answers to the back of the page
- e) The exam is out of 75 pts.

Name:.....

Student No:

Circle your lab section:

Thursday: A1-BSC312, A3-BSC330, A5-BSC335 A7-BSC312

Friday: A2-BSC312, A4-BSC330 A6-BSC335

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15 pts Part 1. Briefly explain what each of the following biological terms means. Where possible include an example in your definition from a group or an organism to which the term applies.

Tetraneural nervous system

Exocuticle

Clitellum

Amphid

Typhlosole

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20 pts Part 2 Answer each of the following multiple choice questions by placing an X in the space to the left of the correct choice. There is only one correct answer for each question.

2.1 The digestive tract of a marine polychaete worm is a straight tube and is suspended in the
body cavity by mesenteries and

- _____ a. cirri.
- _____ b. setae.
- _____ c. muscles.
- _____ d. septa.
- _____ e. acicula.

2.2 The _____ of earthworms are responsible for rapid movements such as escape reactions.

- _____ a. segmental ganglia
- _____ b. subesophageal ganglia
- _____ c. cerebral fibers
- _____ d. giant axons/fibers
- _____ e. supraesophageal ganglia

2.3 The circulatory system of cephalopods (squids and octopods for example) is more efficient than that of other molluscs because:

- _____ a. Cilia no longer move water over the surface of the gill
- _____ b. it is a closed network of vessels.
- _____ c. all blood is circulated through the gill filaments.
- _____ d. accessory or brachial hearts increase blood pressure before it flows through the gills.
- _____ e. All of the above

2.4 Although there may be some dispute about the name the centipedes belong to the arthropod subphylum

- _____ a. Insecta.
- _____ b. Crustacea.
- _____ c. Trilobita.
- _____ d. Chilopoda.
- _____ e. Uniramia.

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2.5 Reproductively, leeches are

- _____ a. protogynous.
- _____ b. hermaphrodite.
- _____ c. parthenogenetic.
- _____ d. dioecious.
- _____ e. asexual.

2.6 The modified veliger of some freshwater bivalves is called the

- _____ a. glochidium.
- _____ b. trochophore.
- _____ c. pilidium.
- _____ d. dipleurula.
- _____ e. cercoid.

2.7 Sperm packets of cephalopods are called

- _____ a. hectocotyli.
- _____ b. stylets.
- _____ c. cocoons.
- _____ d. spermatophores.
- _____ e. gonophores.

2.8 Nematodes

- _____ a. have flame cells.
- _____ b. have an incomplete gut
- _____ c. have amoebic sperm
- _____ d. have external cilia

2.9 The sensory, feeding, and locomotary tagma of chelicerates is called the

- _____ a. chelicera.
- _____ b. prosoma
- _____ c. abdomen.
- _____ d. opisthosoma.
- _____ e. carapace.

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2.10 You will always find these in earthworms, but they may only be present in marine worms, *Nereis* for example, at certain times of the year.

- _____ a. Setae
- _____ b. Metanephridia
- _____ c. Gonads
- _____ d. Clitellum
- _____ e. Eyes

2.11 The thin-walled storage area of the earthworm digestive tract is the

- _____ a. pharynx.
- _____ b. stomach.
- _____ c. crop.
- _____ d. esophagus.
- _____ e. gizzard.

2.12 Segmental arrangement of body parts in an animal is called

- _____ a. metamerism.
- _____ b. triploblastism.
- _____ c. tagmatization.
- _____ d. serialism.
- _____ e. cephalization.

2.13 Reproductive females in a social honey bee colony are called

- _____ a. drones.
- _____ b. queens.
- _____ c. workers.
- _____ d. mothers.
- _____ e. ovigers.

2.14 Marine worms, polychaetes, crawl by means of these leg-like projections of the body wall that also serve in respiration.

- _____ a. aortic arches
- _____ b. nephridia
- _____ c. clitella
- _____ d. palps
- _____ e. parapodia

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2.15 In earthworms, the larval stage is

- _____ a trochophore.
- _____ b. absent.
- _____ c. a veliger.
- _____ d. dormant.
- _____ e. free-living.

2.16 What of the following are adaptations for a predatory life that are found in squids and other related molluscs

- _____ a. loss, or reduction of the shell
- _____ b. change from an open to a closed circulatory system
- _____ c. extra hearts to help pump blood across the gills
- _____ d. loss of cilia of the surface of the ctenidia
- _____ e. all of the above.

2.17 The rasping structure occurring in the mouth of most molluscs is the

- _____ a. tongue.
- _____ b. nacre.
- _____ c. odontophore.
- _____ d. operculum.
- _____ e. radula.

2.18 One feature that is still found in all molluscs is a:

- _____ a. a calcareous external shell
- _____ b. a radula
- _____ c. a ciliary-mucous mode of locomotion
- _____ d. at least some degree of torsion
- _____ e. a mantle
- _____ e. sclerotization

2.19 Which of the following best describes the ancestral appendages of the insect thorax

- _____ a. three pairs of legs and three pairs of wings
- _____ b. three pairs of legs and two pairs of wings
- _____ c. six legs and no wings
- _____ d. eight legs and no wings

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2.20 The water movement in the body of a cephalopod (squid for example) mollusc provides:

- _____ a. oxygen for respiration
- _____ b. jet power for rapid locomotion
- _____ c. a way to carry wastes out of the body
- _____ d. All of these

20 pts Part 3: Complete the following sentences using the appropriate terms. Place the term in the space in the sentence or at the end of the sentence.

- 3.1 Extensions of these cells connect the nervous and muscular systems of a nematode. _____
- 3.2 Because their surface looks like pages of paper, the respiratory structures of spiders are referred to as these (two words). _____
- 3.3 In annelids, structures made from this embryonic tissue are not metamerically arranged. _____
- 3.4 Another name for the crayfish stomach (Two words). _____
- 3.5 The color of the spectrum that most insect can't see. _____
- 3.6 The number of muscle layers in a nematode. _____
- 3.7 The stage in some insects when the transformation from the larval to adult form occurs. _____
- 3.8 Terrestrial snails breathe using this instead of gills. _____
- 3.9 A nematode's cuticle is made of this reinforcing protein. _____
- 3.10 Like human beings, earthworms use this respiratory pigment to transport oxygen. _____
- 3.11 This part of the procuticle is not chemically cross-linked in an arthropod. _____
- 3.12 For insects that don't drink water, this type of water is the only source that they have. _____
- 3.13 These cells in a nematode are thought to be osmoregulatory. _____

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- 3.14 Clams are an example of the mollusc body plan specialized for this type of feeding. _____
- 3.15 Because of torsion, you'll find this on top of a snail's head. _____
- 3.16 Blood in the dorsal vessel of an annelid is pumped toward this part of the animal. _____
- 3.17 Spiders use this to build their webs. _____
- 3.18 When the adult and juveniles look the same in insects, this is referred to as this type of metamorphosis. _____
- 3.19 This major body cavity of a mollusc is also a part of the circulatory system. _____
- 3.20 As a character the uniramous appearance of the walking legs of a crayfish is referred to as being evolutionarily this. _____

Part 4 of the exam starts on the next page

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20 pts Part 4: Answer 4 of the following 8 questions in the space provided each answer is worth 5 points. If you answer more than four only the first four will be counted.

4.1 It's not easy for a nematode to swallow food. What's the problem and how does the nematode overcome it?

4. 2 What is a crystalline style, who has one and what does it do?

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4.3 Describe how blood flows in the circulatory system of an earthworm.

4.4 How does the respiratory system in insects work and how does it differ from most other animal systems

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4.5 How does a squid ingest and digest food?

4.6 Why is only the old cuticle and not the new procuticle digested during moulting in arthropods?

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4.7 Compare locomotion in a marine worm and a terrestrial worm. How are the differences related to how their muscles are organized?

4.8 Compare the appendages on the first tagma of a crustacean and a chelicerate.