

# BIO 1130FF

An introduction to Organismal biology  
Midterm examination  
Worth either 15% or 20% of your final grade

Saturday, October 1, 2011

**Part A: Multiple choice questions**  
**20 points (1 point/question)**

- a) Fill in the bubbles for your name and student number and BIO1130FF for the course code. Fill in the same information in text in the boxes above the bubbles.
- b) Use only a pencil to fill in the answer sheet. If you erase a question be sure to erase all of the pencil mark. Don't place any marks anywhere on the sheet other than where the bubbles are for personal information or your answers.
- c) Do not place any answers on the question sheet.
- d) This is not an open book exam.
- e) **CAUTION to minimize paper waste this part of the exam has been printed back to back**

**NOTE:** If you do not fill in the student number and course code as **BIO1130FF** it will be impossible to identify your answer sheet and you will receive a **ZERO** for this part of the exam

BIO 1130FF - Midterm Examination – October 1, 2011  
Multiple choice questions - Place your answers on the answer sheet

---

---

FF.1 Currently, taxonomic domains include

- a. Archaea, Bacteria, Eukarya.
- b. North America, South America, Eurasia, Africa, and Australia.
- c. Mammalia, Insecta, Aves, and Planta.
- d. Kingdom, Phylum, Class, and Species.

FF.2 Which one of the following predictions follows from the sexual selection hypothesis for why giraffes have long necks?

- a. In contests over females, the male with the longest neck should have an advantage over the other males.
- b. Young males that are given extra amounts of high-quality food should grow particularly long, strong necks.
- c. In contests over females, the best-nourished male should always, or almost always, win.
- d. In natural populations, female neck length should decline over time.

FF.3 Which of the following kinds of traits was originally used for classifying organisms into taxonomic categories?

- a. DNA and amino acid sequences
- b. geography and ecology
- c. morphology
- d. physiology and biochemical pathways

FF.4 The Irish elk and the mammoth are two of the 23 large animals that this scientist used as evidence for this process.

- a. Spontaneous generation
- b. *Scala naturae*
- c. Extinction
- d. Transmutation of species
- e. Transition fossils

FF.5 According to the transmutation of species principle of use and disuse, the form of body parts in offspring

- a. is not changeable.
- b. is the result of natural selection.
- c. is the result of how much the offspring uses a particular body part.
- d. is inherited based on phenotypic changes that occur in parents during their lifetime

FF.6 Which of the following is a compartment that often takes up much of the volume of a plant cell?

- a. Golgi apparatus
- b. peroxisome
- c. lysosome
- d. mitochondrion
- e. vacuole

BIO 1130FF - Midterm Examination – October 1, 2011  
Multiple choice questions - Place your answers on the answer sheet

---

---

FF.7 In the Linnaean classification system, which taxon would generally include the largest number of species?

- a. Family
- b. Order
- c. Genus
- d. Phylum

FF.8 How does artificial selection differ from natural selection?

- a. Artificial selection occurs only in computer simulations, not with actual organisms.
- b. Artificial selection occurs only with plants.
- c. Artificial selection is not based on heritable variation, but on new mutations.
- d. Artificial selection is based on conscious choices by humans.

FF.9 Unlike Lamarckian evolution Darwin's evolutionary scheme was

- a. a linear pattern
- b. a cladistic pattern
- c. a branching pattern
- d. a essentialism pattern

FF.10 This important building block has not been successfully synthesized in experiments looking at the prebiotic organic chemistry of life's origins.

- a. Transfer RNA
- b. Nucleotides
- c. Ribose
- d. Amino acids

FF.11 Water's high specific heat is mainly a consequence of the

- a. inability of water to dissipate heat into dry air.
- b. absorption and release of heat when hydrogen bonds break and form.
- c. fact that water is a poor heat conductor.
- d. high specific heat of oxygen and hydrogen atoms.
- e. small size of the water molecules.

FF.12 Arrange the following discoveries or philosophies in the correct chronological (that's oldest to the newest) order: (1) The largest list of 1400 medicinal plants still in use in 18th and 19th centuries, (2) list of plants whose author is the father of taxonomy, (3) the earth revolves around the sun, (4) the living world is divided into five Kingdoms.

- a. 1, 2, 3, 4
- b. 3, 2, 1, 4
- c. 2, 1, 4, 3
- d. 2, 1, 3, 4

BIO 1130FF - Midterm Examination – October 1, 2011  
Multiple choice questions - Place your answers on the answer sheet

---

---

- FF.13 Why is it important that an experiment include a control group?
- Without a control group, there is no basis for knowing if a particular result is due to the variable being tested or to some other factor.
  - The control group is the group that the researcher is in control of; it is the group in which the researcher predetermines the nature of the results.
  - The control group provides a reserve of experimental subjects.
  - A control group assures that an experiment will be repeatable.
  - A control group is required for the development of an "if, then" statement
- FF.14 The Muslim scholar Avicenna is best known for his biological work on:
- A list of plants with descriptions of each plant's life cycle
  - A list of plants that included a pharmaceutical index of their importance - it was in use until the late 18th century
  - His book the canon of medicine that integrated the works of Greek, Indian and Muslim physicians
  - Introduction of the scientific method
- FF.15 By definition, the difference between prokaryotic and eukaryotic cell type is in the presence/absence of the
- plasma membrane.
  - DNA.
  - chromosomes.
  - nucleus
- FF.16 The Golgi complex.
- synthesizes proteins for export from the cell
  - receives proteins made in the rough ER and chemically modifies them
  - synthesizes lipids
  - stores nucleic acids
  - stores ribosomes
- FF.17 Who was responsible for establishing the classification system that uses binomial nomenclature?
- Carolus Linnaeus
  - Louis Pasteur
  - Jean-Baptiste Lamarck
  - Charles Darwin
- FF.18 Meteorite impacts during the stabilizing phase of the Hadean Eon did which of the following
- increased the amount of water on the planet
  - flash sterilized the planet
  - created the moon that circles the earth
  - all of the above

FF.19 Which of the following is the best example of heritable variation?

- a. Amputation
- b. Red hair
- c. Love for music
- d. Skin cancer

FF.20 Organelles other than the nucleus that contain DNA include

- a. ribosomes, mitochondria, and chloroplasts
- b. chloroplasts
- c. mitochondria and chloroplasts only
- d. mitochondria
- e. ribosomes

BIO1130 Midterm Examination – October 1, 2011

STUDENT NUMBER: \_\_\_\_\_

Don't enter your name.

---

---

**BIO 1130 An Introduction to Organismal biology**  
**Midterm examination**  
**Worth either 15% or 20% of your final grade**  
**Total points for both parts of the exam is 60 pts**

**Saturday, October 1, 2011**

**Part B: Written questions**

- a) Place your name and student number in the space provided below. Be sure that your student number is on the top of each of the following pages – the exam will be separated. ONLY place your student number on the pages where indicated
- b) Answer all questions in the space provided on the exam. Do not transfer answers to the back of the page.
- c) You may use either pencil or ink for your answers.
- d) Answers as written paragraphs are preferred but point form is acceptable as long as the points are logically organized and not random statements or facts
- e) This is not an open book exam.
- f) There are five pages including this one in part B of the exam, be sure you have all five pages.
- g) Enter the multiple choice exam code in the space provided

**Name:** \_\_\_\_\_

**Student number:** \_\_\_\_\_

**Multiple Choice Exam Code (MM or FF):** \_\_\_\_\_

•

**12 pts Part 1.** Briefly explain what each of the following terms means or the biological contribution made by the person. Where possible include an example in your explanation from a group or an organism to which the term or name applies.

Panspermia

Convergent evolution

Kingdom Plantae

Archean eon

STUDENT NUMBER: \_\_\_\_\_

Don't enter your name.

---

---

**18 pts Part 2:** Fill in the missing word, or provide the one word answer in the space provided at the end of the sentence. If the line is missing, add it to the end of the line.

2.1 The nursery rhyme "Ring around the Rosy" describes the reason for the start of which of the Middle Ages? \_\_\_\_\_

2.2 The computational power of the silica computer chip is the defining characteristic of which of Douglas Adams' age of sand to describe the modern era of science. \_\_\_\_\_

2.3 The type of prediction that a scientist's test of a hypothesis is.

\_\_\_\_\_

2.4 Prokaryotes are before the kernel and eukaryotes have a true kernel - what's the kernel? \_\_\_\_\_

2.5 Geological eras are combined into these larger units of time. \_\_\_\_\_

2.6 Most of the earth's gaseous atmosphere probably resulted from its release from the cooling molten core; the process is called this. \_\_\_\_\_

2.7 All jelly fish have unique stinging cells called cnidocytes. The unknown specimen under the microscope has those cnidocytes so it is a jellyfish. This is an example of what type of thinking or reasoning. \_\_\_\_\_

2.8 In dates that include BCE, what the CE refers to (two words). \_\_\_\_\_

2.9 Both a theory and a hypothesis must be able to withstand this. \_\_\_\_\_

2.10 The science of the scientific revolution studied mostly these types of objects. \_\_\_\_\_

2.11 This philosophy on living things saw them as being made up of small machines. \_\_\_\_\_

2.12 Historical narratives are often associated with this type of science.

\_\_\_\_\_

2.13 Greeks such as Plato and Aristotle all believed that organisms were unique and unaltered types, a philosophy given this name. \_\_\_\_\_

2.14 When a scientist tests a hypothesis they often use the logic of "If this is altered or changed then this should happen" in their design. This if/then statement is a form of this." \_\_\_\_\_

STUDENT NUMBER: \_\_\_\_\_

Don't enter your name.

---

---

2.15 Naturalist thinking begins with these philosophers in

400 BCE. \_\_\_\_\_

2.16 Your text book is an example of this type of scientific literature.

\_\_\_\_\_

2.17 Once the genetic code was found and combined with Darwin's theories and there was an explanation for the unique vital force these two philosophies on what life was were combined. \_\_\_\_\_

2.18 One of two forms that carbon took in earth's first atmosphere. It was missing in the first Miller-Urey experiments (Two words). \_\_\_\_\_

**Part three of the exam is on the next page**

STUDENT NUMBER: \_\_\_\_\_

Don't enter your name.

---

---

**10 pts Part 3:** Answer the following two questions in the space provided.

3.1 Two of Darwin's theories in the Origin of Species were accepted almost immediately. One was that there was common ancestry, what was the other? Provide, and briefly explain, two pieces of evidence that support the theory of common ancestry.

3.2 Scientists in the 18<sup>th</sup> and early 19<sup>th</sup> century challenged the *Scala naturae*. Choose two scientists and briefly describe the evidence that challenged the long held belief.