

**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 4, 2014**

**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):** \_\_\_\_\_

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

Don't enter your name.

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**12 pts Part 1.** Briefly explain what each of the following or phrases 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.

Divergent evolution

{ Organism have a structure/something that has a different function } { but the animals/organisms are related to each other/ they descend from a common ancestor } { results in homology } { example using speciation/biogeography } { ex. The one in class we used was the classic modification of the forelimb of the dog, whale, bat, bird, watch in case there are others that are acceptable } First two points Must be there either of the last two to give the total of three points.

Secondary scientific literature

{ written by a scientist in the field } { Is a summery or review of a topic } { cites the or uses the primary literature or original }

Transmutation of the essence (Essentialist theory)

{ Organisms/organism's essence existed as fixed unchanging types that did not evolve } { mutation created new types of organisms } { no gradual changes new types were spontaneous } One point each part, the idea must be present but it does not need to be worded exactly as worded here.

Theory

{ Based on a number of confirmed hypothesis – important that theories arise out of many confirmed testes hypotheis } { provides an explanation for a pattern of series of observations } { can still be tested for confirmation/not a fact }

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**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 After observing the migration of the caribou over a number of seasons a young biologist notices that on some days they stand on snow patches rather than grazing. It leads to the idea that standing on the snow protects against the attack of the mosquitoes that are abundant on the same days that this behavior happens. What kind of reasoning is

this. Inductive

2.2 The validity of historical narrative was ignored as a result of the scientific revolution until the mid 1800's. This scientist revalidated the narrative as a true and sound

scientific method. Darwin

2.3 In this type of review other scientists working in the same area as you look over your manuscript and make recommendation on whether it should be

published. Peer

2.4 Synonym for evolutionary taxonomy. Natural

2.5 The third age in Douglas Adams classification of the scientific discovery was made possible by the creation of this computer component (Two words) Silica chip / computer chip

2.6 The species name is this type of word, in relation to the genus

name. Adjective

2.7 Linnaeus' unique addition to the classification was to give every living organism a name with two parts, it's called this. Binomen

2.8 In the physical sciences observations of the world were made using this preferred technique. Experiment

2.9 If one extreme of the natural variation is selected for having a unfavourable trait, this type of selection occurs. Directional

2.10 The Latin name for the great chain of being proposed by

Aristotle (two words). Scala Natura

2.11 The Greek philosopher who is given the title Ancient Father of taxonomy worked with these organisms. Plants

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Don't enter your name.

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2.12 This part of the range of variation is selected for in disruptive selection. Extremes/edges

2.13 This major taxon is higher than an class but lower than a Kingdom. Phylum

2.14 If both alleles for a character are the same the organism is considered to be this. Homozygous

2.15 Type of mutation when the gene sequence along a chromosome changes from abcdefg to abefg. Deletion

2.16 Crossing over occurs during this type of cell division.  
Meiosis

2.17 This philosophy on living things saw them as being made up of small machines. Physicalists

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

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

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

3.1 What is polyploidy, how and why is it a source of variation and even new species.

{What: polyploidy is an increase/doubling in chromosome number}{Why: Increases in chromosome number increases potential variation}{common in plants/not common in animals}{How: autopolyploidy where the polyploidy occurs in the same species}{How: allopolyploidy when it occurs between different species} Point each max of 5

Note: The question asks about polyploidy creating new species so answers with polyploidy decreasing viability are not acceptable.

3.2 Even though physical sciences dominated the scientific revolution there was some progress in the natural sciences. Give three examples of this progress and the scientist who was responsible.

Any three of the following:

Van Leewenhoek –**microscope** allowed viewing small forms of life never before seen

Vesalius – **anatomy**, used dissection and drawings to identify major anatomical aspect of the human body

Harvey – **physiology** of how systems in the body worked, notably the circulatory system and the movement of blood and body fluids

Linnaeus – **classification** scheme for organisms with hierarchy/binomen

For the first two lists use a point each for the scientists name and finding. For the finding it is not enough just to say the term on bold – there must be some additional explanation for the second point. For the fifth point score there scientist for 1 point using the same criteria to give 5 pts. NO PART MARKS