

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

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**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 62 pts**

**Saturday, October 2, 2010**

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

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**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.

Vitalists

{Explanation for how animals and plants functioned} {governed/behaved/explained by the rules/processes of Physics and Chemistry} {But there was more to it than this – there was a special essence or vital force that went beyond what physics and chemistry could explain – it is important that no marks be given for the role of a genetic program or heredity since this is not a part of the physicalists} 1 point each for a total of 3

Proximate cause

{How questions} {Very mechanical simple questions, no concern about larger evolution questions} {the outcome is a direct result of the cause, } {ex: a stimulus causes a reaction/behaviour} Must have first two for a point each – either of the third or the fourth to give the maximum of 3 points. The

Leclerc

{Scientist in the 18<sup>th</sup> century} {Proposes the idea of common ancestry/that there have been changes in the animals that are present (vestigial structures and cat similarities)} {Biogeography – different animals with similar lives in different locations/ marsupial wolf and mammalian wolf of Australia and North America.} Point each for a total of three points

Hypothesis

{Based on observations} {makes a prediction or explanation of the pattern seen in the observation} {Can be tested to confirm this pattern} – If an example is used to answer the question be sure that all three of these components are clear in the example.

**16 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 Pasteur discredits this form of generation for how living things first appear. **Spontaneous**

2.2 This element is produced by dying red suns. **Carbon**

2.3 Natural sciences and physical scientists both agree that the objects that they study are subject to the laws of this discipline and those of physics. **Chemistry**

2.4 The age of science starts with the scientific revolution. **Modern**

2.5 Protocells that have been made to date lack this one characteristic of life. **Evolution**

2.6 Biology is first described as a science in this century; it marks the start of a better understanding of the living world. **Nineteenth**

2.7 Short nucleotide and protein sequences share this property when they are placed in aqueous solutions. **Insoluble**

2.8 This gas wasn't present in earth's first atmosphere, its absence was why the early atmosphere was reducing. **Oxygen**

2.9 Greeks such as Plato and Aristotle all believed that organisms were unique and unaltered types, a philosophy given this name. **Essentialism**

2.10 With about twenty different building blocks it was long thought that this biopolymer was the genetic material. **Protein**

2.11 Organisms that lived in the past but are no longer living on earth are said to be this. **Extinct**

2.12 This type of literature is written by the investigators that did the work and been reviewed by their colleagues in the field for accuracy. **Primary**

2.13 Douglas Adams divides the history of modern science into four ages what was the principle investigative tool of his second age of sand. **Microscope**

2.14 In addition to making enough measurement you should also do this with your experiment to be sure you consistently reach the same conclusion. **Repeat/Replicate**

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2.15 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**

2.16 Number of Kingdoms in Linnaeus' classification. **Two**

2.17 This third eon in the geological time scale - single celled eukaryotes dominated the world's oceans at the time. **Proterozoic**

2.18 Most of the earth's gaseous atmosphere probably resulted from its release from the cooling molten core. The process was called this. **Outgassing**

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

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

Describe the role of a theory and its falsification in investigations in Natural Sciences in the early 20<sup>th</sup> century

{Theory is comprehensive/detailed explanation supported with a large amount of data and observations} {Arrived at by Inductive reasoning} {Natural sciences is willing to accept multiple theories} {acceptance of multiple theories because of the extreme variability associated with natural sciences/explains animate/living objects which are not uniform} {Isn't immediately falsified of the is a contradictory results or tests of the theory} point each for a total of 5

How does the Proteins first Hypothesis explain the origins of the Central Dogma in Biology; what is the Central Dogma?

{Central Dogma is that DNA contains the coded information that is transferred to messageRNA} {Message RNA is then used to produce the protein or product that the genetic code codes for} {Protein hypothesis is that Protein was the first molecule of the three to appear} {Evidence is that proteins are the present catalysts} {problem how to get from the protein to the genetic code of the RNA/problem small strings are insoluble} see:

[http://salinella.bio.uottawa.ca/BIO1130/Lectures/default.php?1130\\_lect04\\_Hadn\\_Preb.php??E?Md2ChapterMcp1](http://salinella.bio.uottawa.ca/BIO1130/Lectures/default.php?1130_lect04_Hadn_Preb.php??E?Md2ChapterMcp1)

First two points – proper explanation of the Central dogma. Three points for remainder for a total of 5 points