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 13, 2012

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 of 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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12 pts Part 1. Briefly explain what each of the following terms 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.

LUCA
{Lowest/Last Universal Common Ancestor}{the organism from which all living things evolved/all domains of life – All life on earth descends}{A bacteria/archea/prokaryote} {that may have evolved here or from outerspace(Panspermia)}{arose during the Archean/3.5-3.8 Billion years ago}{Included the components of the Central Dogma} First two must be there and the whole abbreviation must be correct} additional point for either of the last two.

Vitalist
{Explanation for how all organisms/animals were living things work but not completely understood/mechanism unclear/they don't work as simple machines}{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

Transmutation of Species
{Lamark's Inheritance of acquired traits} {Use it or loose it created changes – with a clear understanding that the environmental factors causing things to appear/disappear between generation by changes in the essence} {A form of transformation of the essence to explain change}

How questions in science:
{Proximate cause}{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} {Reported as empirical/numerical results}Must have first two for a point each – either of the third or the fourth to give the maximum of 3 points.

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

2.2 The term a biologist uses when something is more than the sum of the parts. **Emergence**

2.3 Naturalist thinking begins with this group of philosophers in 400 BCE. **Greek/Roman (questions asks about the group not the individuals)**

2.4 Greeks such as Plato and Aristotle all believed that organisms were unique and unaltered types, a philosophy given this name. **Essentialists(ism)/Vitalists(ism)**
(Scala naturae is not a philosophy but a mechanism)

2.5 Natural scientists have to deal with this characteristic of the objects that they study, the physical scientists don't have the problem. **Variation/animate/living/Biotic/organic**

2.6 These protein building blocks were found in mater produced by the Miller-Urey experiment (two words). **Amino acids**

2.7 Both a theory and a hypothesis must be able to withstand this. **Testing/Test**

2.8 Marine invertebrates are the main multicellular life form in this geological era. **Paleozoic**

2.9 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**

2.10 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. **Deductive/Deduction**

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

2.12 The glass in fiber optic cables and the speed with which communication and data maybe shared led Douglas Adams' to use it as the hallmark for this age of sand that he proposed to divide up the modern age of science. **Fourth/four/quaternary**

2.13. Type of cause that molecular biologists is working with when comparing the frequency of DNA sequence of a gene that causes a genetic disease in an isolated population of immigrants on a small south pacific island to the country that they arrived from. **Ultimate**

2.14 Of hypothesis and theory this is the more general finding that has the broadest application. **Theory**

2.15 Your text book is an example of this type of scientific literature. **Tertiary/Third**

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

2.17 Most of the earth's gaseous atmosphere probably resulted for its release from the cooling molten core; the process is called this. **Outgassing/Volcanic eruption**

2.18 Physical sciences deal with this type of material, biologists don't and it is one of the reasons that natural sciences were not a part of the scientific revolution. **Inanimate/non-living/ universal/ abiotic/ inorganic**

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 are transitional forms and which of Darwin's theories do they provide evidence for, give an example?

Transitional forms: {Showing the gradual changes as a species evolves into new forms}{ into another form/missing link/common ancestor that explains dramatic divergence divergence} {Supports the theory of no constancy of species 2 pts} or theory of gradual change 1 pt the first is more accurate}{examples may include: seal otter/whale, birds, horse, human evolution from primates – stating this is worth a point}{explaining the example properly is worth a point} Points as indicated be sure to place a 2 beside the check that is worth two points.

3.2 While there are a number of plausible hypotheses for most of the steps in chemical and biological evolution of the first cells there is some uncertainty on how the first macromolecules polymerized. Explain this uncertainty.

{first polymers were of protein} and {Nucleic acids/DNA/RNA}{problem with the first protein chain is that when the amino acids are joined to each other the resulting peptides are insoluble/don't remain in solution – so no long chains of amino acids/proteins}{problem with DNA/RNA is the purine/pyramidine bases have been found but not the base with the ribose sugar and phosphate that is needed to build the chain}If there is no distinguishing between the growing chains of protein and RNA a single point for insolubility of the growing chain is stated. {Even if you do have the whole nucleotide-sugar phosphate as you add the units they growing strand becomes insoluble in water}