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 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 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

{explanation/theory on the origins of life/Central Dogma on the planet}{Comes from another planet/Mars is also acceptable}{Innoculates the earth with the replicating system/Components of the Central Dogma}

Convergent evolution
{Organism have a structure/something that has a similar function}{but the animals/organisms are not related to each other/ they don't descend from a common ancestor}{results in homoplasy/analogous} {ex. The one in class – there may be others wing of an insect and other winged vertebrates, wing of bat and bird (don't share same ancestor, wing of pterodactyl and others etc. Any pair from the winged groups of insects, flying reptiles (pterodactyls), birds and bats} First two points Must be there either of the last two to give the total of three points.

Kingdom Plantae

{Multicellular eukaryote organism will appear but if it is there both must be there for the full point – in part because this also applies to fungi and plants}{Cell walls made of cellulose}{Autotrophic/able to captures sun's energy}

Archean eon

{3.8 – 2.5 Billion years ago}{Period on earth when anaerobic bacteri are the only life form/it is important that they identify that these are bacteria that do not use oxygen for life's process }{ends with the appearance of and accumulation of oxygen }

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? _____**Late**_____

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. _____**Third**_____

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

2.4 Prokaryotes are before the kernel and eukaryotes have a true kernel - what's the kernel? _____**Nucleus**_____

2.5 Geological eras are combined into these larger units of time. _____**Eons**_____

2.6 Most of the earth's gaseous atmosphere probably resulted for its release from the coolong molten core; the process is called this. _____**Outgassing**_____

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. _____**Deductive**_____

2.8 In dates that include BCE, what the CE refers to (two words). _____**Common Era**_____

2.9 Both a theory and a hypothesis must be able to withstand this. _____**Testing**_____

2.10 The science of the scientific revolution studied mostly these types of objects. _____**Inanimate**_____

2.11 This philosophy on living things saw them as being made up of small machines. _____**Physacalists**_____

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

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

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." _____**Prediction**_____

2.15 Naturalist thinking begins with these philosophers in 400 BCE. _____**Greek**_____

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

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. ____**Organacists**_____

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). __**Carbone dioxide**__

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 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.

{The other: No Constancy of species}

For Common ancestry. Any two of the following for two points each – it is essential that the example they give is explained and not just mentioned.

Evidence 1: {Comparative anatomy} with an explanation {similar looking things but they must be homologous and an example of homology}
Evidence 2: {Comparative embryology} with and explanation {In class we discussed the similarity that appears in the developmental stages of the closely related species – the classic being the vertebrate embryology}
Evidence 3: {Vestigial structures} with an explanation {We used goose bumbs, nictating membrane, and appendix – there may be others}
Evidence 4: {Biogeography} with an explanation {As organisms are isolated they may change even though they have a common ancestor – examples Australian fauna of Marsupials compared to mammals elsewhere and yet the two are related}
Evidence 5: {Molecules-Molecular evolution} with an explanation {The more similarity in an amino acid sequence/DNA sequence the more similar and must have common ancestor, mentioned in class cytochrome C rRNA}

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

{What about the Scala Naturae – that the time frame was short – since Oct 23 4004BCE and that organisms never changed or modified – this may not be stated directly but it this point is awarded if both are mentioned in the answer}

Any two of these
Scientist 1: {**Georges-Louis Leclerc, Comte de Buffon**} {studies in biography showed that animals changed in their form aas the moved away from where they first appeared – It is not enough to say Biogeography there must be an explanation to show how biogeography creates species changes}
Scientis 2: {Cuvier} {Studies in extinction showed that there were animals that existed in the past that are not here now – Irish Elk and Mammoth may appear in the answer but they must make the link to change
Scientist 3: {Charles Lyell} {Geologist whose work on stratigraphy lead to the conclusion that the world is much older than the time frame suggested in the Scala}