BIO1130 Midterm Examination – October 13, 2012
STUDENT NUMBER: 6406105
Don't enter your name.

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

An extraterrestial eukaryotic organism that is theorized to have landed on earth and become its first inhabitants. It's a supporter of the theory of panspermia, where meteors which collided into earth contained dormant bacteria which awakened. LUCA are also believed to be archaea and have the ability to survive very harsh conditions.

1

Vitalist

Believe in the physical and chemical make up of living organisms as machines, they also believe in a vital essence which exists that makes living things more than just their machine aspects. They disagreed with the physicalists on this issue of vitality.

3

Transmutation of Species

A concept theorized by Lamarck which states that an organism can adapt to its environment and these changes in the organism can be passed on to offspring. For ex. the giraffes had to adapt to an area that required them to feed off tall trees. The giraffes subsequently had their necks grown due to this and when the offspring were born they too had longer necks.

2

How questions in science

These are proximate questions and a more physical way of thinking in science. It looks to see certain patterns and mechanisms. It requires a lot of experimentation and observes the present function rather than the past.

2

8

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. 19th

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. Biological

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

2.5 Natural scientists have to deal with this characteristic of the objects that they study, the physical scientists don't have the problem. animate

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. facts

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

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. 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. 4th age of sand

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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

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 tests

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

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

Part three of the exam is on the next page

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

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

Transitional forms are a way to observe the missing links in evolution chains. It allows scientists to see how an ancestor of an organism evolved and adapted into to what it is today. This is done by comparing the structure of fossils of animals in that chain. This is seen in the example of the equestrians, and how they evolved into large, powerful horses of today, through changes in bone structure that allowed them to be faster runners and in their molars to see how they adapted to eat plants on the plains. This supports Darwin's theory of No constancy in species because it showed how populations changed over time.

1

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.

There is uncertainty on how the first macromolecules became polymerized because there weren't any explanations as to how organic molecules could have existed or been formed. Small organic molecules are needed to polymerize into macromolecules. Scientists had trouble figuring out how the basic building molecule could have been developed on earth which is carbon. Some theories have been made such as one that used an experiment which mimicked the environment of primordial earth. It used a closed test tube and inserted water, ammonia, methane which reacted with sparks and they found carbon formed. There was another theory about clay which is thought to have held the macromolecules as they polymerized so they didn't dissociate in aqueous solutions, also it may have provided energy for polymerization.

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