

Name: _____ Student

BIO 1130 A Introduction to Organismal biology
Midterm examination
Worth either 15% or 20% of your final grade
Total points on both parts of the exam is 70 pts

Saturday, October 4, 2008

Part B: Written questions

- a) Place your name and student number in the space provided below. Be sure that your name, or student number, is on the top of each of the following pages – the exam will be separated
- 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) Please circle your lab section in the table below. This information will be used to return your written exam to you

Name: _____

Student number: _____

	Monday	Tuesday	Wednesday	Thursday	Friday
Week	A1- BSC312	A2- BSC312	A3- BSC312	A4- BSC312	A5- BSC312
1	A6- BSC330	A7- BSC330	A8- BSC330	A9- BSC330	A10- BSC330
	A11- BSC335	C1- BSC 335	C2- BSC 335	C3- BSC 335	C4- BSC335
Week	B1- BSC312	B2- BSC312	B3- BSC312	B4- BSC312	B5- BSC312
2	B6- BSC330	B7- BSC330	B8- BSC330	B9- BSC330	B10- BSC330
	B11- BSC335	C5- BSC335	C6- BSC335	C7- BSC335	

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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.

Charles Lyell

Ligase

Analogy

Transmutation (Essentialists)

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20 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.

- 2.1. 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. _____
- 2.2. Kingdom of unicellular eukaryotes. _____
- 2.3. The geological eon that were are currently in. _____
- 2.4. The science of the scientific revolution studied mostly these types of objects.

- 2.5. A key character that separated the organisms in the Kingdoms that Linnaeus described.

- 2.6. Polymer subunits. _____
- 2.7. Douglas Adams divides the history of modern science into four ages what was the principle investigative tool of his first age of sand. _____
- 2.8. 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. _____
- 2.9. The major taxa recently changed, and this new one was added at the very top of the scheme.

- 2.10. These organisms dominated the Achaean eon _____
- 2.11. The modern age of science begins with this revolution. _____
- 2.12. Historical narratives ask this type of question. _____
- 2.13. The presence of variation that is based on a genetic program distinguishes this type of science. _____
- 2.14. 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.

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2.15. If you don't take enough measurements your result may be subject to this type of error.

2.16. Lipids are insoluble in water because they have this polarity property. _____

2.17. Of hypothesis and theory this is the more general finding that has the broadest application.

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

2.19. In the classification scheme after Kingdom, Phylum, Class comes this taxon.

2.20. The Genus and species names are written in italic because there something different about these words when they're found in a sentence. What's the difference? _____

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

3.1 Compare the temperate grassland and temperate forest in terms of temperature, rainfall and vegetation and the limits for primary productivity. (This answer lends itself to a well organized table)

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

BIO 1130MM

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Part A: Multiple choice questions

26 points (1 point/question)

- a) Use only a pencil to fill in the answer sheet. If you erase a question be sure to erase all of the pencil mark. Don't place any marks anywhere on the sheet other than where the bubbles are for personal information or your answers.
- b) Do not place any answers on the exam sheet.
- c) On the bubble answer sheet enter **BIO1130MM** for the course code.
- d) Use the bubbles to spell out your surname and provide your initials in the last column.
- e) This is not an open book exam

NOTE: If you do not fill in the student number and course code as **BIO1130MM** it will be impossible to identify your answer sheet and you will receive a **ZERO** for this part of the exam

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Multiple choice questions - Place your answers on the answer sheet

1. What is the proper sequence for the publication of a scientific finding? 1) peer review of the manuscript 2) prepare the manuscript according to the journal's instructions 3) paying the journal to have the manuscript published 4) revision of the manuscript 5) indexing of the manuscript
 - A) 2, 1, 4, 3, 5
 - B) 2, 1, 5, 3, 4
 - C) 3, 2, 1, 4, 5
 - D) 1, 3, 4, 2, 5
2. Which of the following titles is an example of a primary source of literature?
 - A) Identification and partial characterization of digestive proteinases from two species of bed bug (Hemiptera, Heteroptera, Cimicidae)– Canadian Journal of Zoology (Guess who?)
 - B) Natural history of the scuttle fly, *Megaselia scalaris*, Annual reviews of entomology.
 - C) An introduction to animals in Biological science, 3rd edition
 - D) Black clouds on the horizon for birds of the world, Globe and Mail
 - E). Was Darwin wrong – National Geographic
3. Why does the DNA double helix have a uniform diameter?
 - A) Nucleotides bind with nucleoside triphosphates.
 - B) Purines pair with pyrimidines.
 - C) Nucleotides bind with nucleosides.
 - D) C nucleotides pair with A nucleotides.
 - E) Deoxyribose sugars bind with ribose sugars.
4. Which of the following has the highest Darwinian fitness?
 - A) A personal trainer who works out at the gym every day
 - B) A woman who home schools her two children
 - C) A sperm donor who anonymously fathers 52 children
 - D) A scientist who devotes herself to science and wins the Nobel Prize
5. Put the following steps of DNA replication in chronological order: 1) Single-stranded binding proteins attach to DNA strands 2) Hydrogen bonds between base pairs of antiparallel strands are broken 3) Primase binds to the site of origin 4) DNA polymerase binds to the template strand 5) An RNA primer is created.
 - A) 3, 2, 1, 5, 4
 - B) 1, 2, 3, 4, 5
 - C) 2, 1, 3, 5, 4
 - D) 1, 2, 3, 5, 4
6. The ability to sweat or pant is considered an adaptation. Why?
 - A) It allows a body to release excess water.
 - B) It allows a body to absorb heat, due to water's high specific heat.
 - C) It is an important signal to others that an individual is too hot.
 - D) It cools a body off, due to water's high heat of vaporization.
7. Evolution by natural selection changes the population but not the individual.
 - A) True
 - B) False

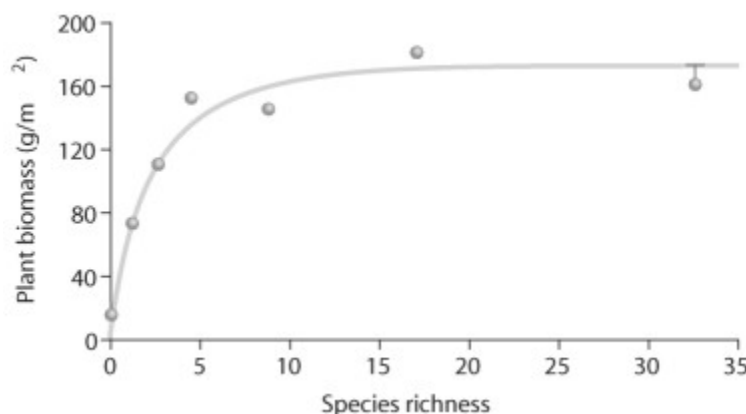
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8. Which of the following is the best modern definition of evolution?
- A) Inheritance of acquired characters
 - B) Descent without modification
 - C) Survival of the fittest
 - D) Change in allele frequencies in a population over time
9. On the tree of life, branches that lead to several groups of green algae branch off from the one that leads to land plants. Which one of the following statements is correct?
- A) Land plants appeared first in the fossil record.
 - B) Green algae and land plants are not related.
 - C) Land plants and algae have a common ancestor.
 - D) Green algae are very closely related to the fungi.
10. In deep water, which of the following abiotic factors would most limit productivity?
- A) Solute concentration
 - B) Light availability
 - C) Temperature
 - D) All of the above
11. After DNA replication is completed, _____.
- A) One DNA double helix consists of two old strands and one DNA double helix consists of two new strands
 - B) There are four double helices
 - C) Each new DNA double helix consists of two new strands
 - D) Each new DNA double helix consists of one old DNA strand and one new DNA strand
 - E) Each of the four DNA strands consists of some old strand parts and some new strand parts
12. The specific abiotic factors defining a biome are _____.
- A) Maximum annual temperature and moisture levels.
 - B) Annual variation in temperature and precipitation.
 - C) Maximum annual temperatures, moisture levels, and average annual temperature.
 - D) Average annual temperature and moisture levels.
 - E) Average annual temperature, moisture levels, and annual variation in temperature and precipitation.
13. In the Linnaean classification system, which taxon would generally include the largest number of species?
- A) Family
 - B) Phylum
 - C) Order
 - D) Genus
14. A farmer uses triazine herbicide to control pigweed in his field. For the first few years, the triazine works well and almost all the pigweed dies; but after several years, the farmer sees more and more pigweed. Which of these explanations best describes this observation?
- A) Triazine-resistant pigweed has less-efficient photosynthesis metabolism.
 - B) Natural selection caused the pigweed to mutate, creating a new triazine-resistant species.
 - C) Only triazine-resistant weeds survived and reproduced, so each year more pigweed was triazine-resistant.
 - D) The herbicide company lost its triazine formula and started selling poor-quality triazine.

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15. According to the latest hypotheses, why do evergreens predominate in cold environments?
- A) Evergreens begin photosynthesizing in early spring, even before the snow melts.
 - B) Evergreens do not shed their leaves and thus do not need as many soil nutrients.
 - C) Evergreens photosynthesize all year round.
 - D) Evergreens begin photosynthesizing in early spring, even before the snow melts. Evergreens do not shed their leaves and thus do not need as many soil nutrients.
 - E) Evergreens do not shed their leaves and thus do not need as many soil nutrients. Evergreens photosynthesize all year round.
16. Chemical evolution refers to which of the following?
- A) Water condensed to form the first oceans.
 - B) Large molecules tended to break apart because of the intense sunlight and heat from volcanoes.
 - C) Small molecules reacted to form larger, more complex molecules.
 - D) Earth's crust solidified, even as massive bombardment from outer space continued.
17. Who proposed that organisms could be organized into a great chain of being?
- A) Wallace
 - B) Lamarck
 - C) Linnaeus
 - D) Darwin
 - E) Aristotle
18. Which of the following is the best example of a heritable variation?
- A) Love for music
 - B) Skin cancer
 - C) Amputation
 - D) Red hair
19. On the tree of life, the branch leading to animals is closer to fungi than it is to the branch leading to land plants. Which of the following statements is correct?
- A) Fungi and animals do not have a common ancestor.
 - B) Animals and plants do not have a common ancestor.
 - C) Animals and land plants are more closely related to each other than either is to fungi.
 - D) Animals and fungi are more closely related to each other than animals are to land plants.
20. Which statement about spontaneous generation is false?
- A) It occurs every time a new species evolves from a preexisting species.
 - B) Pasteur demonstrated that it does not occur under normal laboratory conditions.
 - C) It apparently occurred at least once - when life on Earth began.
 - D) It addresses the formation of living cells from previously nonliving material.
21. Which of the following would be useful in creating a phylogenetic tree of a taxon?
- A) Behavioral data from living species
 - B) Morphological data from fossil species
 - C) Genetic sequences from living species
 - D) All of the above
 - E) None of the above

22. Which of the following observations lead to the conclusion that the food competition hypothesis for giraffe neck length might not be correct?
- A) Male and female giraffes spend most of their time feeding low in trees.
 - B) In certain populations at certain times of year, only male giraffes feed high in trees.
 - C) Giraffes rarely die of starvation, so food availability is unimportant.
 - D) In the populations studied to date, giraffes never feed high in trees.
23. Why was Darwin and Wallace's theory of evolution by natural selection revolutionary?
- A) It was the first time a biologist had proposed that species changed through time.
 - B) It dismissed the idea that species are constant and emphasized the importance of variation and change in populations.
 - C) It proved that individuals acclimated to their environment over time.
 - D) It implied that England's economy would improve if the monarchy were eliminated.
24. Upon looking at the figure, what can you conclude about the data?



- A) As species richness decreases, plant biomass increases.
 - B) As species richness increases, plant biomass increases.
 - C) As species richness changes, plant biomass remains consistent.
 - D) As species richness increases, plant biomass increases and then levels off.
25. Carbon is an important element for biology because
- A) It has the ability to form six covalent bonds.
 - B) Of the variety of carbon skeletons and functional groups that can be built on them.
 - C) Carbon is so rare, organisms conserve it highly.
 - D) It has very high electronegativity and forms highly stable bonds.
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