

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, 2016

Part B: Written questions

Please read the following instructions and sign in the space provided below to acknowledge the instructions:

- a) Cellular phones, unauthorized electronic devices or course notes (unless an open-book exam) are not allowed during this exam. Phones and devices must be turned off and put away in your bag. Do not keep them in your possession, such as in your pockets. If caught with such a device or document, the following may occur: you may be asked to leave immediately the exam, academic fraud allegations will be filed which may result in you obtaining a 0 (zero) for the exam
- b) Place your name and student number in the space provided below. Be sure only your student number is on the top of each of the following pages – the exam will be separated and if your name is not on a page your mark will be zero for that page.
- c) 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) A calculator is not required for the exam
- g) There are five pages, including this one, in part B of the exam, be sure you have all five pages.
- h) Enter the multiple choice exam code in the space provided

Name: _____

Signature: _____

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.

Synapomorphy

{shared between organisms and found in common ancestor} {derived traits} {used in cladists to determine evolutionary history/phylogeny}

Transmutation of species

{Lamarck's Inheritance of acquired traits} {Use it or lose 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}

Alfred Wallace

{proposed the concept of Natural Selection at the same time as Darwin} {worked in the Amazon and/or Indonesia} {Usually only mentioned because his work supports Darwin more elaborate proof of Natural Selection}

Homoplasy

{synonym for analogous} {Characters shared by different species but not in their common ancestor} {Usually environmental modifications} {fish like bodies of marine mammals and reptiles}

STUDENT NUMBER: _____

Don't enter your name.

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 If a major scientific finding is applicable throughout the universe it reaches this level, unfortunately biological facts will never reach this level if universality is the sole criteria. _____ **Law** _____
- 2.2 In its simplest form a historical narrative is this. _____ **Story** _____
- 3 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** _____
- 2.4 The modern age of science begins with this revolution. _____ **Scientific** _____
- 2.5 This type of reproductive isolation of species occurs even if sperm from one species fertilizes the egg of another. _____ **Postzygotic** _____
- 2.6 If you don't take enough measurements your result may be subject to this type of error. _____ **Sampling** _____
- 2.7 The fibre optic cable allowed transmission of data quickly over long distance and Douglas Adams felt it defined this age of scientific discovery. _____ **Fourth/4th** _____
- 2.8 Horses and zebras can mate but their offspring can't produce young. It's an example of this type of isolating mechanism (Two words). _____ **Hybrid Sterility** _____
- 2.9 These appendages of bats and birds are homologous with our arms. _____ **Arms** _____
- 2.10 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** _____
- 2.11 This ancient father of taxonomy was a student of this Greek philosopher. _____ **Aristotle** _____
- 2.12 The science of the scientific revolution studied mostly these types of objects. _____ **Inanimate** _____
- 2.13 In cladistics analysis the pleisomorphic character is given this numeric symbol. _____ **Minus** _____
- 2.14 Douglas Adam's definition of the different Ages of scientific discovery was based on the use of this material in the making of glass. _____ **Sand** _____

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Don't enter your name.

2.15 These derived characters are shared by all the members of the clade and are referred to as these. _____ **Synapomorphies** _____

2.16 When long separated populations that have become ring species come back into contact with each other and competition between the two results in the disappearance of one of the ring species this disappearance is referred to as this. _____ **Extinction** _____

2.17 The evolutionary history of a group is referred to as it's _____ **Phylogeny** _____.

2.18 Biological term for a fertilized egg. _____ **Zygote** _____

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 is Darwin's theory on "common ancestry"? In your answer provide two observations/examples that support the theory.

Common ancestry is {organisms arise from a branching pattern/organisms share common ancestors }

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 an 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 bums, 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 }

Evidence 6: {An accurate discussion of fossils for a point but fossils are the best evidence No constancy of species }

3.2 What is divergent evolution, give an example and explain its potential impact of our understanding of evolution?

{Organism have a structure/something that has a different function} {but the animals/organisms are related to each other/ they descend from a common ancestor} {results in homology } {example using speciation/biogeography} {ex. The one in class we used was the classic modification of the forelimb of the dog, whale, bat, bird, watch in case there are others that are acceptable} First two points Must be there either of the last two to give the total of three points.