

**Examination – October 3, 2015**

**MM.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 in searchable database**

- a. 2, 1, 5, 3, 4
- b. 3, 2, 1, 4, 5
- c. 1, 3, 4, 2, 5
- d. 2, 1, 4, 3, 5

**MM.2 About which of these did Darwin have a poor understanding?**

- a. the factors that cause individuals in populations to struggle for survival
- b. the sources of genetic variations among individuals
- c. how a beneficial trait becomes more common in a population over the course of generations
- d. that individuals in a population exhibit a good deal of variation
- e. that much of the variation between individuals in a population is inherited

**MM.3 Anagenesis is distinguished from cladogenesis mainly because \_\_\_\_\_.**

- a. anagenesis is the creation of new species while cladogenesis is the creation of entirely new phyla
- b. anagenesis is the transformation of one species into another but in cladogenesis a new species branches off an existing species and both survive
- c. the evolution of a major animal body plan is termed anagenesis, and cladogenesis is the subsequent diversification of the new form
- d. cladogenesis is the transformation of one species into another but in anagenesis a new species branches off an existing species and both survive

**MM.4 Charles Darwin's eventual role on the Beagle was to \_\_\_\_\_.**

- a. assist the ship in its surveying mission
- b. develop the theory of evolution
- c. collect evidence to support the theory of evolution
- d. serve as a naturalist

**MM.5 The first classification of plants created during the Greek and Roman ages divided the plants into groups based on:**

- a: Seed morphology
- b: The shapes of the leaves of the plant
- c: Their flowers
- d: The reproductive structures of the plant.

**MM.6 Which of the following statements best describes the rationale for applying the principle of parsimony in constructing phylogenetic trees?**

- a. The molecular clock validates the principle of parsimony.
- b. Similarity due to common ancestry should be more common than similarity due to convergent evolution.
- c. Parsimony allows the researcher to "root" the tree.
- d. The out-group roots the tree, allowing the principle of parsimony to be applied

**MM.7 The phenomenon of fusion is likely to occur when, after a period of geographic isolation, two populations meet again and**

- a. the hybrid zone is inhospitable to hybrid survival.
- b. their chromosomes are no longer homologous enough to permit meiosis.
- c. a constant number of viable, fertile hybrids is produced over the course of generations.
- d. a decreasing number of viable, fertile hybrids is produced over the course of generations.
- e. an increasing number of viable, fertile hybrids is produced over the course of generations.

**MM.8 Which of the following taxon categories has the highest number of species in it?**

- a. Genus
- b. Family
- c. Order
- d. Phylum

**MM.9 Similarity in genomes between humans and chimpanzees indicates the following.**

- a. They have the same number of chromosomes.
- b. They can interbreed and produce fertile offspring.
- c. Genomes alone do not accurately delimit species.
- d. At some time in the past, they shared a common ancestor.

**MM.10 Which of the following examples would fit Jean Baptiste de Lamarck's flawed mechanism for evolution?**

- a. Giraffes necks became longer over many generations as they stretched to reach leaves higher in trees, and passed the longer stretched neck on to their offspring.
- b. Ancestors of woolly mammoths which were born with slightly more hair survived and reproduced at a higher rate in cold weather than those born with less hair.
- c. As evolution progressed, ape mothers gave birth to human babies.
- d. Mutations caused white moths to become black when smoke from industry coated tree trunks with soot.

**MM.11 Why is it important that an experiment include a control group?**

- a. Without a control group, there is no basis for knowing if a particular result is due to the variable being tested or to some other factor.
- b. The control group is the group that the researcher is in control of; it is the group in which the researcher predetermines the nature of the results.
- c. The control group provides a reserve of experimental subjects.
- d. A control group assures that an experiment will be repeatable.
- e. A control group is required for the development of an "if, then" statement

**MM.12 The morphological species concept would relate more to**

- a. postzygotic isolation.
- b. prezygotic isolation.
- c. neither prezygotic nor postzygotic isolation.
- d. it would depend on the species used for the study.

**MM.13 Which of the following taxa were not in Linnaeus's origin taxonomy?**

- a. Order
- b. Phylum
- c. Class
- d. Kingdom

**MM.14 Which of the following statements is NOT compatible with Darwin's theory?**

- 4a. Evolution has altered and diversified ancestral species.
- b. Evolution occurs in individuals rather than in groups.
- c. Natural selection eliminates unsuccessful variations.
- d. Evolution occurs because some individuals function better than others in a particular environment.

**MM.15 Shared derived characters are most likely to be found in taxa that are**

- a. monophyletic.
- b. polyphyletic.
- c. paraphyletic.

**MM.16 The Muslim scholar Al-Dinawari is best known for his biological work on:**

- a. A list of plants with descriptions of each plant's life cycle.
- b. A list of plants that included a pharmaceutical index of their importance - it was in use until the late 18th century.
- c. His book the canon of medicine that integrated the works of Greek, Indian and Muslim physicians.
- d. Introduction of the scientific method.

**MM.17 Which of the following statements is most consistent with essentialism?**

- a. All living things have changed slowly over time and this explains the gradual changes in the rock layers.
- b. All living things on the planet have remained unchanged since they were first placed on the planet
- c. A characteristic set of unchanging properties defines every living organism found on earth.
- d. extinctions are the result of catastrophic events like the biblical flood.
- e. Species changed as they dispersed from the center of creation.

**MM.18 Which of the following best describes a Linnean binomen?**

- a. A combination of a noun and adjective in Latin
- b. A unique name of all living species.
- c. Two words.
- d. both a and b.
- e. both a and c.

**MM.19 Georges Curvier, a founder of paleobiology, suggested that abrupt changes in rock layers and the fossils they contained represent \_\_\_\_\_.**

- a. layers from periods of great colonization of new species
- b. layers of gradual steady accumulation of sediments and dead organisms
- c. layers deposited when many organisms died in local catastrophes
- d. layers of descendants of species found in deeper layers

**MM.20 Which of the following statements is not a key part of Darwin's theory?**

- a. Populations change over time as adaptive traits increase in frequency.
- b. Changes that an organism acquires during its lifetime are inherited by its offspring.
- c. Variability in characteristics allows some individuals to better survive and reproduce than others.
- d. Individuals of the same species compete with each other for the limited resources