

GVZ 2018 Practice Questions Set 1 Test 3

- 1 Describe the anatomy and function of the turtle shell.
- 2 Describe respiration in turtles. How does the shell affect respiration?
- 3 According to the most recent phylogenetic studies, Birds are...
 - a) ornithischian dinosaurs
 - b) saurischian dinosaurs
 - c) neither a nor b.
- 4 List five Families of turtles, and one species and unusual trait (i.e., a trait not shared by all turtles) for each Family.
- 5 Did any nonavian dinosaurs have feathers? If yes, describe potential functions of feathers in nonavian dinosaurs. If no, describe why feathers would have evolved in the lineage leading to extant birds.
- 6 Cynodonts (a "therapsid") are frequently referred to as "mammal-like reptiles." Why is this a scientifically inappropriate name for them?
- 7 Describe avian and nonavian examples where sexual selection has probably caused the evolution of sexual dimorphism. Be sure to describe *how* sexual selection (i.e., what kind of sexual selection) could have caused the evolution of the trait. In your examples, is there likely to be natural selection for survival countering the sexual selection?
- 8 Describe Wallace et al.'s approach to assessing conservation priorities in sea turtles.
- 9 Describe polyandry in birds (i.e., what is it, what morphologies and behaviors are associated with it).
- 10 What is a lek? Give an example of a lek.
- 11 How are feather types categorized?
- 12 Describe synapomorphies of Aves. Discuss these synapomorphies with reference to their functional effects on flight.
- 13 Do birds have an intromittent sex organ (i.e., a penis)?
- 14 Give a node-based definition for the taxon name Archosauria, a group that includes all extant species of crocodylians and birds. Give a stem-based definition for the name Archosauromorpha, which includes Archosauria and its extinct close relatives.

- 15 How do woodpeckers avoid head injuries while woodpecking?
- 16 List and describe synapomorphies for Mammalia, *Homo*, Marsupialia, Primates, Monotremata, Testudines.
- 17 What muscles power the wing downstroke in birds during flight? What muscles power the upstroke?
- 18 Draw a phylogenetic tree of the relationships of humans, ostriches, chimps, gorillas, *Australopithecus*, snakes, *Tyrannosaurus rex*, Sphenisciformes, Apodiformes, and crocodiles.
- 19 Describe the anatomy and phylogenetic position of *Archaeopteryx*. Why is this species considered to be an important transitional form?
- 20 Would you classify bird song as learned, innate (where *innate* refers to a trait that is unaffected by environment, and *learned* refers to a trait that is completely determined by environment), or due to some combination of these causes? Explain your answer.
- 21 Discuss evolutionary changes in the bones and musculature of the skull (including the jaw and teeth) during the evolution of synapsids, from the earliest forms to modern extant mammals.
- 22 How do monotremes differ from Therian (Eutherian and marsupial) mammals? What conditions in monotremes are considered plesiomorphic relative to the conditions in therians?
- 23 List Eutherians and Aves that are primarily aquatic.
- 24 List some synapsids that are not included in "crown group" mammals.
- 25 Describe the phylogenetic position of turtles relative to other reptiles and to mammals.
- 26 Describe the anatomy and taxonomy of the pangolin.
- 27 True or false: koalas are gentle, harmless creatures that resolve disputes between individuals by hugging and exchange of gifts.
- 28 How would you distinguish an Artiodactyl from a Perissodactyl? Give an example taxon (common name is OK) from each of these groups.

- 29 What are megachiroptera and microchiroptera? What ecological and/or anatomical characteristics distinguish these groups?
- 30 Discuss some of the important discoveries and texts in the study of human evolution.
- 31 Compare the 'Multiregional' and 'Recent African Origin' hypotheses for the evolution of humans. Think of data that would support or refute each hypothesis.
- 32 True or false: Dinosaurs are extinct. Explain your answer.
- 33 Compare and contrast the anatomical structures involved in the wings of different lineages of vertebrates that perform powered flight.
- 34 Describe the hypotheses that have been put forth to explain the evolution of powered flight in birds.
- 35 Describe anatomical traits in turtles associated with terrestrial ecology, and anatomical traits associated with aquatic ecology.
- 36 Describe conservation threats in turtles.
- 37 Describe Andersson's test of female choice in widowbirds.
- 38 In birds, many socially monogamous pairs experience extra-pair copulation. Many of such pairs also perform mate guarding. What factors determine when a (e.g.) male elects to guard his socially monogamous mate rather than pursue other females? (you may want to discuss the results of the study by Beecher and Beecher)
- 39 Discuss the pros and cons (in the sense of natural selection) of extra-pair copulations for males and females in birds
- 40 How do Metatherians (marsupials) differ from Eutherians (especially reproductively)?
- 41 Describe the anatomy of marsupial newborns. What traits are well developed (relatively precocial) on marsupial newborns? Give a functional explanation for these traits.
- 42 List as many mammal groups ('Orders') as you can (example: Lagomorpha). Include a brief (one- sentence) description of each group, and whether they are Monotreme, Marsupial, or Eutherian.
- 43 List as many Neognathe bird groups as you can (example: Sphenisciformes), and

list a common name for a taxon in each group.

44 Rank the following groups according to the number of species in each group: Monotremata, Syapsida, Eutherians, Metatherians, *Homo*, Aves, Mammalia.

45 What characteristics distinguish old world monkeys from new world monkeys? Do these two groups form a clade separate from humans?

46 List some mammal species or groups with altricial young, and some with precocial young.

47 Describe (anatomical, behavioral, etc.) characteristics of (some) male birds that evolved as cues for female mate choice.

48 Describe anatomical difference(s) between Cryptodira and Pleurodira, and list an example taxon from each group.

49 Give the genus name of one the turtle species found in UNM's duck pond.

50 Discuss Tim Rowe's (1988) distinction between taxon *diagnoses* and taxon name *definitions*, as applied to mammals. How does he suggest to define the name Mammalia? Is his suggested definition a node-based definition, a stem-based definition, or something else?

51 Which of the following is the closest living relative of humans?

- a gorillas
- b chimps
- c new world monkeys
- d none of the above; all are equally closely related to humans
- e none of the above; none are related to humans.

52 True or false: Synapsids and Dinosaurs coexisted as extant lineages. Explain your answer.

53 Compare the bones in a lizard jaw to the bones in the mammalian inner ear. Use the term "homologous" in your comparison.

54 How are the teeth of a wolf different from the teeth of *Anolis*?

55 List and describe function for glands found in mammalian skin.

56 Give vertebrate examples of homology in behavior, morphology, and molecules.

57 Give vertebrate examples of convergence/homoplasy in behavior, morphology, and molecules.

- 58 Describe the impact and perception of "invasive" species, including brown tree snakes, Burmese pythons, cane toads, chamaeleons, and coqui frogs. What steps are being taken to eradicate each of these species? For each of these species, is eradication a good idea? Why or why not?
- 59 "Naturalized species are bad." Discuss arguments in favor of and in opposition to this statement. Give examples in support of your arguments.
- 60 Explain how "invasive species" can or cannot cause "damage" to ecosystems. Try to answer both with and without discussing potential harms/benefits to humans.
- 61 Compare skull structure in lizards, mammals, and turtles.
- 62 How can you distinguish a rabbit skull from a mouse skull?