

AVSC 279 Homework Study Questions Fall 2013

These questions are not for credit but are meant to allow you to think about the material to study for the midterm. All of the classroom discussion PowerPoint materials, two journal articles, and web links embedded in the discussion material are included in this examination, but you should focus on major ideas, and understanding how the different animal kingdoms differ from each other in the topic areas that we have examined to date. Please bring your questions to class on Monday, September 30th.

- 1) Explain the meaning of the terms, “Homology”, “Analogy” in evolutionary biology terms.
- 2) Give two examples each of homology and analogy, and explain how they are similar, or different.
- 3) What does “Homoplasy” mean?
- 4) What is Morphology ? Explain what this term means, and how it is related to Darwin’s theories, and the field of Evolutionary Biology.
- 5) How do we define a pet, and how is a pet different from other animal categories ?
- 6) Are pets involved in human health ? Name two ways that pets support human health and explain how this occurs, and in what settings.
- 7) Name three scientific disciplines that have been associated with companion animal pets, and explain how they are associated with them. What would you study in those disciplines if you could ?
- 8) How has animal welfare evolved over time in the US and the UK ? Discuss the organizations and principles involved in animal welfare. What would animal welfare developments would you like to see in Lebanon ?
- 9) What are the six domains of living things ? How are they classified ?
- 10) How do we study the relationship between structure and function in individual animals and/or animal systems ?
- 11) What are the structural layers that make up a skin sample ? Can you sample these layers in a biopsy ? If so, what can you do with that sample ? Please provide an example of how you would use a skin sample obtained in this manner.
- 12) What is the function of skin ? Can you identify and discuss 3 types of structures that originate from skin layers ? If so, what layers ?
- 13) Describe the embryonic development of skin.
- 14) Describe how adult stem cells in skin produce keratin layers in cornified / keratinized skin areas. At what type of skin would you NOT typically find keratinized upper layers ?
- 15) Name four features of a skin segment. Provide a drawing below to demonstrate your structures; please label the drawing, including the skin layer and feature being described.

- 16) What is the difference between exocrine and endocrine glands ?
- 17) Name three components of the endocrine system. Focusing on one of them, describe where a particular hormone is produced, and the location of the target cells that it affects in the body.
- 18) Why do frogs and fish have a mucoid layer on their skin ? Name the functions that this layer provides for them.
- 19) What is the difference between the Epidermis and the Dermis ? Can you identify specialized structures that are produced by each layer, and in what type of animal ?
- 20) Why is an Arapaima able to resist predation by Piranha fish in South American lakes ?
- 21) Which organism uses skin for respiration, and why ?
- 22) How does locomotion on land and water provide an evolutionary link for some species ? Select a species that we discussed in class and explain how animal classes or species that originally are thought to have lived in one environment ultimately evolved to live in the other one.
- 23) What is the specialized process that lizards and snakes periodically undergo in their skin ? How does it occur ? How is their skin different from other animal classes ?
- 24) What function does a brood patch serve ? In what type of animal does this occur ?
- 25) What is a salt gland, and what does it do ? Provide a labeled drawing of this organ, and a brief description of how it works.
- 26) How do birds fly ? What structures do they have that allow them to do this ? Briefly discuss how we think that birds evolved, the primary groups that they seem to be most related to evolutionarily, and their characteristic features that allow them to attain flight for those that have that ability.
- 27) What is the difference between a horn and an antler ?
- 28) What is hair, and how is it related to fur, and vibrissae ?
- 29) What is a mammary gland and why is it important ?
- 30) Name the major divisions of the skeleton, and two bones that are found in each division.
- 31) Please name one cavity and two projection terms used when describing the skeleton.
- 32) Name two classical nomenclature terms used to describe the hindlimb OR the forelimb.
- 33) How does turtle or tortoise structure differ from other skeletal structures ?
- 34) Name three bones in the hand and foot
- 35) Name three major bones in the forelimb and hindlimb
- 36) What does the way an animal ambulates (e.g. walks, swims, or flies) tell us about how they have evolved ? Discuss examples of how the skeleton has changed over evolutionary time.
- 37) How do the skull bones develop in an individual animal ?
- 38) What structures make up a mammalian tooth ?

- 39) Why is dentition (teeth) and the skeleton structure important ? Please provide 2 examples of how we use that information to study a given individual, or class, of animals.
- 40) Can you describe different types of teeth, the animal that has them, and how the tooth structure is related to their diet ? Please provide a labeled drawing of these structures as a part of your answers
- 41) In this diagram of a horse please identify the following structures: poll, croup, suspensory ligament, cannon bone, hoof, coronet
- 42) Can you identify the muscle fiber in this histological photo of skeletal muscle?
- 43) What are the three types of muscle in our bodies? Where are they found?
- 44) What is the neuromuscular junction? Where is it located, and what does it do? Provide a diagram of this structure along with your explanation.
- 45) What is the difference in electrical movement and response between a skeletal muscle cell and reflex, and a cardiac muscle cell and heart muscle contraction? Discuss the structure of a skeletal or cardiac muscle cell, and provide a drawing to illustrate your work.
- 46) What are the major divisions of the structure of the heart?
- 47) How does an avian / bird or reptilian heart differ in overall structure from a mammalian heart?
- 48) How is smooth muscle arranged in the bowel? Diagram an example of a bowel cross section.
- 49) What is the function of smooth muscle in the bowel?
- 50) Why do we place a fistula in the side of some cattle?