

CHORDATA (Ch. 26)

1. Identify the 3 subphyla of Chordata, and describe their general anatomy & distinguishing characteristics.
2. Identify the 4 hallmark characteristics of chordates and describe their fate among the different subphyla.
3. Describe the evolutionary origin and relationship of tunicates, lancelets, and vertebrates.

PISCES (Ch. 27)

1. Identify the 4 classes of fishes, and compare the structure of their jaws, gill openings, tails, and buoyancy.
2. Describe the function of mucous glands, scales, photophores, heterocercal vs homocercal tails, spiral valve, sensory crypts, ampullae of Lorenzini, claspers, fin rays, lung, swim bladder, operculum, and lateral line.
3. Discuss the role of electrogenesis, catadromy, and anadromy among fishes.
4. Discuss the different osmoregulatory strategies in cartilaginous, marine bony, and freshwater bony fishes.
5. Discuss how sharks and other fishes can maintain a core body temperature higher than their environment.

AMPHIBIA (Ch. 28)

1. Identify the 2 major orders of amphibians, and describe their characteristics (incl. modes of locomotion).
2. Describe the anatomical differences between frogs and toads, and between salamanders and lizards.
3. Discuss how amphibians have evolved to live on land, and why they are still restricted to water.
4. Discuss how amphibians differ from other vertebrates (external gills, positive pressure lungs, & neoteny).

REPTILIA (Ch. 29)

1. Identify the 3 major orders of reptiles, and describe their distinguishing characteristics (incl. skeleton).
2. Describe the differences between turtles & tortoises; lizards & snakes; and lizards & crocodilians.
3. Identify the carapace, plastron, scutes, forked tongue, Jacobson's organ, loreal pits, fangs, and hemipenes.
4. Discuss the modes of reproduction and sex determination (genetic vs environmental) among reptiles.
5. Discuss several current hypotheses for the extinction of dinosaurs.

EXAM 4

AVES (Ch. 30)

1. Identify the 2 subgroups of birds, and describe their diversity and distinguishing characteristics.
2. Discuss the adaptations for flight among birds (incl. feathers, bone structure, air sacs, reduction in organs).
3. Discuss the mechanics of flight, gliding, and migration; and the difference between precocial and altricial.
4. Identify the function of the shaft, quill, barbs, barbules, contour feathers, tail feathers, down, preening, structural color, leg ligaments, cloacal protuberance, brood patch, pellet, syrinx, calls, songs, and air sacs.

MAMMALIA (Ch. 31)

1. Identify the 3 subgroups of mammals, and describe their diversity and distinguishing characteristics.
2. Describe the variety of hair, glands, teeth, horns-antlers, locomotion, and reproduction among mammals.
3. Distinguish true hibernation, winter dormancy, and daily torpor, and identify the mammals involved.
4. Identify the marsupium, uterus, placenta, umbilical cord, guard hairs, underhairs, vibrissae, endocrine glands, mammary glands, claws, nails, tusks, hoof, tail fluke, blubber, echolocation, estrous, and baculum.

VERTEBRATES (Ch. 26-30)

1. Describe the diversity, phylogenetic relationship, and habitats of each of the vertebrate classes.
2. Discuss the invasion of land by vertebrates, and the advantages and disadvantages of being terrestrial.
3. Compare the circulatory pathway, respiration, integument, skeleton, urine, and flight among vertebrates.
4. Identify the advantages and disadvantages of ectothermy vs endothermy; oviparity vs ovoviviparity vs viviparity; internal vs external fertilization; shelled vs gelatinous eggs; and the vertebrates involved.

EXAM DATE: _____ TIME: _____