21S BISC208 Lab 8 - Vertebrate and Invertebrate Dissections

Student's Name

Institutional Affiliation & Department

Course Title

Instructor's Name

Date

21S BISC208 Lab 8 - Vertebrate and Invertebrate Dissections (15 pts)

Instructions: *Fill out the table below with the main* ***DIFFERENCES*** *between the specimens for each category* ***(7 pts)****. Then answer the questions that follow.*

	Dogfish Shark	**Frog**	**Crayfish**	**Earthworm**
Locomotion	They have pectoral and pelvic fins to aid in movement, with the pelvic fins making them more maneuverable. The have powerful muscles which enable the tail to swim side by side as the long streamlined body eases movement in the	They have extended legs modified for jumping.	They move through swimming by beating their paddles on their body segments from backward, moving forward at varying speed and force.	They have segmented body which enables movement control. The segments move independently, some shortening while others lengthening, hence moving forward. They have setae (bristle like structure) on their bottom side that push out

	water, even up to long distances.			of their bodies to grab soil around them, thus moving forward.
Sensory/nervous	They have large eyes to allow them to see. The keen, sensitive smell allows them to detect their prey from far. They have nostrils. They have nerves for chemical sensitivity. They have lateral lines, which senses pressure differences as they move in water and ampulla of Lorenzini for detecting danger.	They have a tympanic membrane, which vibrates in response to sound waves.	That has a ladder-like central nervous system to enable local anatomy and physiology. They have nerve cords(ganglia)	They have a ventral nerve cord through which their segments are connected, facilitating movement and response to light, touch, chemicals, and vibration.

Feeding and digestion	They have gills, which enable them to catch prey and chew it. The cloaca, which is the opening of the digestive system, enables undigested food to come out through it.	They have a large fleshy tongue, which facilitates the grabbing and swallowing of food. They also have glottis, which ensures that the swallowed food does not go into the respiratory tract.	They have the cardiac and pyloric stomach to ensure that indigested food is broken. They have very short but complete digestive system They have digestive gland which produce enzymes to help break down food They have antennal gland for excreting body waste	They have muscular gizzards, which ensures that the food they eat is completely ground. They also have intestinal walls containing blood vessels absorbing and transporting digested food to the rest of the body. They also have muscular pharynx which push food to the oesophagus.
Gas exchange and transport (respiration and circulation)	They have external gills and bony structures, which enables them to breathe while in water. They also	They have the skin, lungs, and mouth lining all for respiration. However, when fully submerged in	The exoskeleton in the gills, which helps in oxygen uptake and expulsion of carbon	They have moist skin They take in oxygen through their skin and expel carbon dioxide through their body

	have spiracles for gaseous exchange.	water, respiration takes place exclusively through their skin. They have both external and internal naris which facilitate respiration when not in water. They have eustachian tubes to equalize pressure in the tympanic membrane	dioxide. They have very large and feathery gills so as to increase the surface for oxygen absorption.	surface. They have aortic arches that carry blood to the bottom side, hence maintain pressure.
Structural support	They have tails, which give them balance as they move around in the water. The internal gas bladder enables dogfish sharks to stay at a constant place in the water.	They have mucus skin, enabling the skin to stay moist, smooth, and slippery, thereby absorbing water.	They have their head and thorax fused to form a cephalothorax with eight jointed legs, and in any case, one of their legs break, they regrow.	They have circular muscles surrounding each body segment to ensure they move. They also have pharynx through which food gets into their mouth, and they grasp hold of the

				food.
Reproduction/ Reproductive strategy	Reproduction is through the embryos developing inside the eggs, which are then retained within the mother's body until they develop fully and are ready to be hatched.	It takes place through the cloaca, which allows for the passage of eggs and sperms.	They reproduce through mating, after which the female carries the fertilized eggs for four to six weeks for them to be fully developed. After that, the fully developed eggs are transported to the outside body and are glued to the tails. Later on, the eggs are hatched by the end of the spring.	They are hermaphrodites, but do not self-fertilize. They have to mate so as to exchange sperms then the fertilized eggs later slide into the soil and hatch into young worms.

Additional questions

Methods of gaseous exchange and adaptation to the environment

- Dogfish sharks exchange gases through their gills. They also have spiracles for gaseous exchange.
- Frogs exchange gases through their skin, lungs, and mouth lining. The skin has thin tissue of membrane to allow diffusion of gases into the blood vessels. The skin also has mucus gland which help keep it moist so as to absorb oxygen when not in water.
- The crayfish exchange gases through the exoskeleton in their gills. They gills are feathery to increase the surface for oxygen absorption.
- Earthworms exchange gases through their skin and body surfaces. The skin is moist to absorb readily dissolved oxygen.

The unique structural structures used for digestion.

- The Dogfish shark has a cloaca opening in the digestive system, ensuring that all indigested foods are expelled out of the body.
- The frogs have gastric glands in the stomach, which secrete enzymes to aid in breakdown of food.
- The crayfish have two stomachs, namely cardiac and pyloric stomach, which ensures that all indigested foods are broken down. They also have digestive gland which produce enzymes to help break down food
- The earthworms have gizzards, which ensures that all eaten foods are completely ground. They also have muscular pharynx which push food to the esophagus.

How earthworms reproduce

The earthworms are hermaphrodites, meaning they carry both the male and female gametes. However, earth worms do not self-fertilized. They have to mate in order to exchange sperms. When earthworms are ready to reproduce, the clitellum produces cocoon which slides slowly to meet sperms from the mating partner. When mating, semen is passed from seminal receptacle of one worm to the seminal receptacle of the other worm. Fertilized eggs are then passed into the cocoon, then fall into the soil and hatch in to young worms.

The most interesting feature that I learned from watching these dissections was on crayfish. During dissections, I learned that the crayfish have two stomachs called the cardiac stomach and pyloric stomach. Interestingly enough, they reproduce through mating though this takes a different path as the females carry the fertilized eggs until they develop. They are transported to their tails from where they, later on, are hatched at the end of the spring.