BIOL 1114 Exam #2 (Preview) October 16, 2017

Use a #2 pencil to fill in the information on your NCS answer sheet.

1. Put your **O-Key Account Username** in the spaces indicated for LAST NAME and darken the corresponding circles.
2. **Write your Name** (Last, First) and the word **"Star" or "NoStar" above** the words "Last Name".
3. Put your **CWID** in the spaces indicated for **"Student ID"** and darken the corresponding circles.
4. Enter **1732** in the spaces indicated for **"Course number"** and darken the corresponding circles.
5. Enter **001** (Star) **or 002** (NoStar) in the spaces indicated for **"SEC"** and darken the corresponding circles.

Failure to perform this correctly will incur a -10 pt handling fee. Read all questions and answers ***carefully*** before choosing the **single BEST response** for each question. Feel free to ask the instructor for clarification

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Some cyanobacteria produce the neurotoxin **anatoxin-a**. Four dogs swam in and drank water from a pond in which such cyanobacteria were growing, and three died within one hour. Their initial symptoms included shallow breathing and a lack of muscle contractions.

Poison	Mode of Action	source
physostigmine	inhibitor of acetylcholinesterase	calabar bean
botulinum	inhibitor of acetylcholine secretion	bacteria
tetrodotoxin	Na^+ channel blocker	puffer fish
oubain	inhibitor of the Na^+/K^+ pump	plants
coniine	**?**	hemlock plant
anatoxin-a	**?**	cyanobacteria

A doctor receives a patient, Jerry, who has just ingested the poisonous sap from the milkweed plant. Jerry is completely paralyzed.

A mega-volcanic eruption happens from the sea-floor in the middle of the Pacific Ocean, immediately creating a new island land mass near the Fiji Islands. Grassy plants are the first to colonize the island in the first few years and as they decay they provide the soils necessary for one certain palm tree species to survive should it arrive on the island. Imagine that many species of palm trees have the ability to colonize the island. Many generations later the island indeed supports only this specific species of palm tree. Years after the successful palm tree species was established on this island, a large hurricane nearly wiped out the entire population.

Socrates, the great philosopher of antiquity, was executed in 399 B.C. by being compelled to drink a cup of poison derived from the hemlock plant (*Conium maculatum*). His pupil Plato reported that "Socrates walked about… saying that his legs were heavy,… [The executioner] kept his hand upon Socrates, and after a little while examined his feet and legs, then pinched his foot hard and asked if he felt it. Socrates said no [*Phaedo*]." Unable to move, Socrates soon ceased breathing and was pronounced dead. Modern science now recognizes that **coniine** is the active poisonous ingredient within the hemlock plant. Another prisoner near Socrates was also to be executed. However, upon drinking the same amount of hemlock as Socrates, he did not die!

Skarigs are fictional parrots and the only birds living on the Hoagie islands, a part of the fantasy Jersey archipelago off the coast of Argentina. Twelve visibly different types of skarigs are found on the various islands, with populations on the eastern islands resulting from colonization from the western islands. Skarigs differ in size, shape, and the length and curvature of their bills. While their diets are broad on the islands where each skarig type is exclusive, they are distinct on the islands where two or more types are found. The skarigs populations on each island resulted from founder events.

An unusual feature on two of the islands is a tuft of curly feathers found behind the head of some of the Blue-headed skarigs. Though found in low frequency among the Blue-headed skarigs on Avocado Island, the curly tufts are very common on Turkey Island. Those with or without curly feathers produce equal numbers of surviving fertile offspring. This was confirmed when scientists removed curly feathers from some skarigs and glued them to the heads of others.

The Cross-billed skarigs found on Rye Island are the only type that feed on seeds of spiralina plants. Their bills are able to grip and twist free the seeds because they fit uniquely into grooves on the seeds. Without skarigs, spiralina seeds remain attached to the plants and they rarely sprout or grow into new plants.

Red-headed skarigs, the only carnivorous types, are found on the Islands of Tomato and Guava. On Guava, their heavy predation on guava lizards is having a very negative impact on the lizards, which may be leading to the lizard's extinction. To digest their lizard prey, Red-headed skarigs secrete enzymes (a form of protein) their herbivorous relatives lack.

Yellow-headed skarigs evolved in areas with abundant water and have kidneys similar to mammalian kidneys