

UMSO: Herpetology Answer Key

Tiebreakers, in order of “priority”:

These WILL still be scored with the rest of the test even if there is not a tie. If there is a tie, go down the list of these, and whichever team has the correct answer for the given question will win the tiebreak.

1. Station 8, question 67a
2. Station 9, question 77b
3. Station 10, question 87c
4. Station 14, question 121
5. Station 12, question 106
6. Highest score on station 15 (the calls station)

Station 1: 13 points possible

1. (1 point) C
2. (1 point) E
3. (1 point) Testudines
4. (1 point) Serpentes, Lacertilia/Sauria, Crocodylia (Do not give credit for any family names – these are the only acceptable answers. They only need to have listed 1).
5. (1 point) Blue
 - a. (1 point) It is a sign that liquid is building up between the snake’s eye and eye cap (a part of the skin). The liquid helps the eye cap separate from the eye more easily during shedding.
6. (1 point) No
 - a. (1 point) 100-700Hz
7. (1 point) Thigmothemy
 - a. (2 points: 1 for describing what they do during the day and 1 for description of night) During the day, reptiles engage in heliothemy, which involves getting heat from the sun’s short wavelength radiation. To do this, they must position themselves in an open, sunny environment. Since this is not possible during the night, they must rely on the heat that was trapped in the ground throughout the day for energy. Thus, they crouch low to the ground in regions that received sunlight for a significant portion of the day to obtain heat.
8. (1 point) False (They do produce hissing noises, but they do not have a larynx or vocal cords)
9. (1 point) False
10. (1 point) True

Station 2: 17 Points Possible

11. Taxonomy:
 - a. (1 point) Class: Amphibia
 - b. (1 point) Order: Caudata/Urodela
 - c. (1 point) Family: Plethodontidae
 - d. (1 point) Genus: Pseudotriton
12. (1 point) They want the other male to be tricked into releasing an unnecessary spermatophore, which will reduce his potential to mate with a female.
13. (3 points) Possible answers (accept anything that makes sense- 1 point per valid item, up to 3): Pollution; Deforestation; Acid drainage from coal mines; Stream siltation
14. (Toxic Secretions Question):
 - a. (1 point) Pseudotritontoxins
 - b. (1 point) Dorsal surface (the back)

15. (1 point) No
 a. (1 point) They are found in the eastern US, along the East Coast from northern Florida to Southern New York.
16. (1 point) Aids in chemoreception (smelling);
17. (1 point) Pink or red with black spots;
18. (1 point) Can protract its tongue and capture insects on the tongue pad
19. (2 points- 1 for yes, and 1 for accurate description) Yes, the females provide eggs with protection from predators until they hatch, but newborns are independent after hatching
20. (1 point) Nocturnal.

Station 3: 19 points possible

21. (1 point) Colubridae
22. (1 point) *Masticophis*
23. (1 point) *Thamnophis*
24. (1 point each, 11 points possible): Must have correct item circled for parts a-k.
- | | | | | |
|----|----------|----------|-------------|----------------|
| a. | A | B | Both | Neither |
| b. | A | B | Both | Neither |
| c. | A | B | Both | Neither |
| d. | A | B | Both | Neither |
| e. | A | B | Both | Neither |
| f. | A | B | Both | Neither |
| g. | A | B | Both | Neither |
| h. | A | B | Both | Neither |
| i. | A | B | Both | Neither |
| j. | A | B | Both | Neither |
| k. | A | B | Both | Neither |
25. (1 point) Pest Control (eat rodents and insect pests)
26. (1 point) If it is cold, the snakes will be more likely to remain stationary or attack. If it is warm, the snakes are more likely to flee.
27. (1 point) Snake B
 a. (1 point) Its prey (amphibians such as salamanders and roads) must live near water.
28. (1 point) Divided

Station 4: 17 points possible

29. Taxonomy:
- (1 point) Phylum: Chordata
 - (1 point) Class: Reptilia
 - (1 point) Order: Squamata (Do not accept Lacertilia/Sauria- That's a suborder, not an order)
 - (1 point) Family: Lacertidae
 - (1 point) Genus: N/A *Only give credit if they wrote something to the nature of "N/A"
30. (2 points, only 2 continents needed) Europe, Africa, Asia
31. (1 point) Cincinnati, Ohio
32. (1 point) False
33. (1 point each, 4 points possible) For each of the following characteristics, indicate if it is typical of males or females of this group.
- Male** Female
 - Male **Female**
 - Male **Female**
 - Male** Female
34. (1 point) Day
35. (1 point) They are primarily insectivores but also eat scorpions, seeds, spiders, and fruit.

36. (1 point) Caudal autotomy (1/2 credit for only autotomy: "Caudal" specifies that the tail is the body part being lost)
37. (1 point) False
38. (1 point) False

Station 5: 16 points possible

39. Taxonomy:
- (1 point) Class: Amphibia
 - (1 point) Order: Anura/Salientia
 - (1 point) Family: Ranidae
 - (1 point) Genus: N/A *Only give credit if they wrote something to the nature of "N/A"
40. (1 point) 3
41. (1 point) Urinate on them
42. (1 point) *Batrachochytrium dendrobatidis*,
(1 point) Chytridiomycosis
43. (1 point) Unpigmented Black or brown
(1 point) Unpigmented Black or brown
- (1 point) When eggs are laid out of the open, they must be pigmented in order to protect against UV radiation, so they are darkly pigmented.
44. (1 point) Underground or at the bottom of bodies of water
45. (1 point) True
46. (1 point each, 3 points possible)
- More Less
 - Shorter Longer
 - Larger Smaller

Station 6: 11 points possible

47. (1 point) Alligatoridae
48. (1 point) Crocodylidae
49. (1 point) Alligatoridae
50. (1 point) They dig deep holes that fill with water, serving as a reservoir for other animals.
51. (1 point) B
52. (1 point) The outside temperature.
53. (1 point) True
54. (1 point) Females stay near the eggs. When the young start making noises from inside of the egg, she digs them up and helps them hatch. She will sometimes help them find water and protect them for ~1-1.5 years if they stay in the area. In some crocodiles, the father takes care of the young.

Fill in the following chart: (3 points total for the chart)

Characteristic	Crocodile (0.5 point each, 1.5 possible)	Alligator (0.5 point each, 1.5 possible)
55. Dermal pressure receptors location	Throughout body; Found on almost every scale;	Only around jaw/snout/head;
56. Relative level of salt toleration	Relatively higher (salt glands are functional)	Relatively lower (salt glands are non-functioning)
57. Nesting location	Muddy or sandy areas	In vegetation near freshwater

Station 7: 13 points possible

58. (1 point) Genus: *Deirochelys*
59. (1 point) Genus: *Trachemys*

60. (1 point) Family: Emydidae
 (1 point) Genus: *Chrysemys*
61. (1 point) Genus: *Pseudemys*
62. (1 point) Family: Emydidae
 (1 point) Genus: *Emydoidea*
63. (1 point) Family: Emydidae
 (1 point) Genus: *Chrysemys*
64. (1 point) Family: Testudinidae
 (1 point) Genus: N/A *Only give credit if they wrote something to the nature of "N/A"
65. (1 point) Family: Emydidae
 (1 point) Genus: *Actinemys*

Station 8: 13 points possible

66. Taxonomy:
- (1 point) Order: Testudines
 - (1 point) Family: Trionychidae
 - (1 point) Genus: N/A *Only give credit if they wrote something to the nature of "N/A"
67. (1 point) East Asia (specifically Japan)
- (1 point) (TB-1: *First tie breaker*) 2 possible options: Japanese Softshell (*Trionyx japonicus*) or Chinese Softshell (*Pelodiscus sinensis*);
68. (1 point) False
69. (2 points- 1 point per valid item) Alligators, crow, foxes, raccoons, skunks, raptors, American black bear;
70. (1 point) Alligators, Humans
71. (1 point) True
72. (1 point) Faster
73. (1 point) Slow-moving streams, swift rivers, lakes, and ponds; Sometimes found in brackish waters; (Give credit for any aquatic, brackish or freshwater, habitat)
74. (1 point) Staying at the bottom of the pond, buried in the mud to hide from predators.

Station 9: 17 points possible

75. Taxonomy of Image A:
- (1 point) Order: Caudata/Urodela
 - (1 point) Family: Plethodontidae
 - (1 point) Genus: *Ensatina*
76. Taxonomy of Image B:
- (1 point) Order: Caudata/Urodela
 - (1 point) Family: Salamandridae
 - (1 point) Genus: N/A *Only give credit if they wrote something to the nature of "N/A"
77. (1 point) A
- (1 point) Ring Species
 - (2 points- The bolded, underline sections are necessary. 1 point for having each) (TB-2: First, tiebreak based on the 2 necessary elements, then tiebreak based on quality/detail of response) A ring species is a single species that become geographically isolated over a circular area, which causes the neighboring populations to differ slightly (but they can still interbreed). However, at the extreme ends of the distribution, the differences between the populations become so great that they can no longer interbreed. (It is similar to going up a spiral-shaped parking garage: as you gradually go up, the elevation differences are not great, but when you've reached the top, you are significantly higher than where you started).
78. (1 point) Both
79. (1 point) On land

80. (1 point) 9-16 (accept anything in the range of 3-25)
 81. (1 point) True
 82. (1 point: Must have both- all or nothing) Vision and lateral line organs
 83. (1 point) 0 (newts don't have costal grooves)
 84. (1 point- ½ credit for only one of the two) Skin & tissues lining the mouth

Station 10: 14.5 points possible

85. (2.5 points possible: -1/2 for each letter that's either circled incorrectly or should be circled and isn't)
 A B C D E
 86. (1 point) Batesian mimicry
 87. (2 points) The difference lies in the method of toxin delivery. Venomous organisms inject toxins into their victims using an apparatus such as a fang or a stinger. Poisonous organisms do not deliver toxins directly. Instead, they are only harmful when eaten or touched.
 a. (1 point) Helodermatidae, Viperidae/Viperinae, Elapidae, Colubridae (though not harmful to humans)
 b. (1 point) Salamandridae, Bufonidae, Ranidae, Microhylidae (rarely), Plethodontidae (some members), Proteidae, Ambystomatidae
 c. (2 points- 1 for correct Y/N, the other for example) (TB-3) Yes. Possible examples: red-necked Keelback (*Rhabdophis subminiatus*), Asian Tiger Snake (*Rhabdophis Tigrinus*).
 88. (1 point) Red blood cells
 89. (2 points, 1 per valid symptom) Muscle paralysis, death because of an inability to breathe, droopy eyelids, double vision, excessive salivation/vomiting
 90. (1 point) False
 91. (1 point) None of them live close enough to humans to cause a problem (most live in the sea).
 92. (1 point) The presence of heat-sensing pits on the face.

Station 11: 8 points possible

93. (1 point) Temporal Scale
 94. (1 point) Supraocular Scale
 95. (1 point) Rostral Scale
 96. (1 point) Frontal Scale
 97. (1 point) Parietal Scale
 98. (1 point) Stomach
 99. (1 point) Trachea
 100. (1 point) Hemipenes

Station 12: 11 points possible

101. Taxonomy:
 a. (1 point) Order: Squamata (no credit for Lacertilia/Sauria)
 b. (1 point) Family: Iguanidae
 c. (1 point) Genus: *Dipsosaurus*
 102. (1 point) They wedge themselves in small crevices of rock and use their lungs to inflate themselves so they cannot be pulled out. They can also drop their tails.
 103. (1 point) It helps them maintain their gut fauna (the beneficial microbes living in their stomachs).
 104. (2 points- Need 2, give credit for anything that makes sense) Habitat destruction (conversion to agricultural lands, residential development, road construction), Killing on highways
 105. (1 point) Color: Pink
 a. (1 point) Both

106. (1 point) (TB-5) It is believed that this reduces the competition for food, allowing the young to feed more easily.
107. (1 point) Creosote bush

Station 13: 10 points possible

108. Taxonomy:
- (1 point) Order: Testudines
 - (1 point) Family: Emydidae
 - (1 point) Genus: *Terrapene*
109. (1 point) 21-25 degrees Celsius (69.8-77 degrees Fahrenheit)
110. (1 point) False
111. (1 point) It is hinged, allowing the turtle to completely close itself inside the shell (for protection against predators).
112. (1 point) False
113. (2 points-1 point per valid predator) Minks, skunks, raccoons, dogs, coyotes, red foxes, rodents, crows, snakes (copperheads, racers, cottonmouths).
114. (1 point) Sea level to 6,500m (most are found around 1,500m)

Station 14: 7 points possible

115. (1 point, ½ credit for only one of the names) Painted turtle (*Chrysemys picta*)
116. (1 point, ½ credit for only one of the names) Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*)
117. (1 point) Species of special concern
118. (1 point) Threatened
119. (1 point) Estivation/Aestivation
120. (1 point) Amphibians
121. (TB-4) (1 point) *Opheodrys*

Station 15: 15 points possible

122. (1 point) Family: Hylidae
(1 point) Genus: *Acris*
(1 point) Species Common Name: Eastern Cricket Frog
123. (1 point) Family: Hylidae
(1 point) Genus: *Hyla*
(1 point) Species Common Name: Cope's Gray Treefrog
124. (1 point) Family: Bufonidae
(1 point) Genus: N/A *Only give credit if they wrote something to the nature of "N/A"
(1 point) Species Common Name: Fowler's Toad
125. (1 point) Family: Hylidae
(1 point) Genus: *Pseudacris*
(1 point) Species Common Name: Spring Peeper
126. (1 point) Family: Ranidae
(1 point) Genus: N/A *Only give credit if they wrote something to the nature of "N/A"
(1 point) Species Common Name: Green Frog

Note: Although the rules do not permit asking for photo identifications of any taxonomic groups not explicitly on the official list, there was a rules clarification which stated that students may be asked to identify sounds down to the species level. It can be found here: <https://www.soinc.org/herpetology-div-c>