

Fossils C - Fossils - BirdSO C 2021 Invitational - 03-07-2021**Instructions** (shown before students start the test)

Welcome to the 2021 BirdSO Fossils C Exam!



This test is not open internet. Please make sure you are only accessing binder materials and the video linked during testing! Make sure at least one partner is on a private wifi network v access to YouTube.

Introduction (shown after students start the test)

Good luck on the test! For any inquiries please reach out to cruzss@mit.edu.

You will have a bit under an hour to complete the test. The tiebreakers will be counted as marked questions first. Then your score for station 21 will be used to break ties. If the tie is still unbroken, the tie will be decided by your response to the Bonus question (the Spongebob question discussed at the beginning of the video and shown at the bottom of your answer she This is the only question which is actually shown entirely on your answer sheet. All other questions can only be fully understood by watching the video. You are free to increase the speed slow down, skim through, pause, rewind, etc. the video. However, the full video is 33 minutes long, and the mandatory stations (1-20) make up 31 minutes of that video. The test is mad vary in difficulty, with some questions that nearly all competitors can fully understand to others that are based on advanced understanding of archaeology and paleontology pulled from lectures and content courtesy of UMass Boston and the Massachusetts Institute of Technology. A special thank you to Mark Kirste for inspiring the test format, Dr. John Steinberg and D Barbara Imperiali for inspiring some of the test content, and an immense hug, salute, and thank you to Lisa Poole for inspiring much of my Fossils enthusiasm as well as that of the thousands of students who have competed at the NorCal State Championship and Central Valley Regional. **And as always, a special thank you to you competitors. While I my not know all of you, I hope that this test challenges you to learn new things while also dominating the competition stage! If you love this test, don't forget to fill out the feedback form! If you hate this test, then definitely don't forget to fill out the feedback form! It is linked in the test conclusion.**

BirdSO Fossils Exam Video

BirdSO Fossils Exam Video



If you don't see a video above, open this link in a new window, it is recommended you have one tab open with the exam and another with the video : <https://youtu.be/3b1GLCQtKw>

(<https://youtu.be/3b1GLCQtKw>) (<https://youtu.be/3b1GLCQtKw>) .

Station 1 : Don't Move

1. (2.00 pts) Fill in the first block with the organism which appears first in the video, then fill in the second box with the organism which appears second in the video.
Please remember to not include taxonomic classification labels in your answer. For example, do not say "genus Velociraptor" say "Velociraptor".

2. (3.00 pts) Fill in your response below:

3. (2.00 pts) Fill in your response below:

4. (2.00 pts) Enter your response below in the form ##

5. (1.00 pts) Select the correct response below:

- ☐ A) The first organism in the video
☐ B) The second (sail-back) organism

Station 2 : Anatomy and Paleontology

6. (1.00 pts) Fill in the name below:

7. (2.00 pts) Fill in the name below:

8. (1.00 pts) Fill in the name below:

9. (1.00 pts) Fill in the name below:

10. (3.00 pts) Fill in the answer below:

11. (2.00 pts) Select the problem number that corresponds to each bone. For example, to select the bone from problem 7, select "bone 7".

(Mark **ALL** correct answers)

- ☐ A) Bone 6
- ☐ B) Bone 7
- ☐ C) Bone 8
- ☐ D) Bone 9

Station 3 : Deep Blue Sea

12. (1.00 pts) Give the species, but remember not to say "species" in your answer.

13. (1.00 pts) Give your estimate below:

- ☐ A) 1-2
- ☐ B) 2-5
- ☐ C) 5-10
- ☐ D) 10-14
- ☐ E) 14-20
- ☐ F) 20-30

14. (3.00 pts) Give your theory here:

15. (1.00 pts) Identify the organism:

16. (1.00 pts) Identify the prey's class:

17. (1.00 pts) Is the statement true or false?

☐ True ☐ False

18. (2.00 pts) Give the period in which it lived and the nickname below:

Station 4 : Silty Shores

19. (2.00 pts) Name the law:

20. (1.00 pts) Give the image:

- ☐ A) Image A
☐ B) Image B

21. (2.00 pts) Describe the process in the box below:

22. (1.00 pts) Why or why not?

23. (1.00 pts) Give an estimate as to how long you expect it to take:

- ☐ A) Closer
- ☐ B) Farther

25. (1.00 pts) True or False?

- ☐ True ☐ False

Station 5 : A Good Show

26. (1.00 pts) Identify the organism:

27. (2.00 pts) Give the time period:

28. (2.00 pts) Give the purpose of the behavior:

29. (2.00 pts) What does this mean?

30. (1.00 pts) Give the Phylum of their prey:

31. (2.00 pts) What part(s) are preserved?

Station 6 : One of Five Ends

32. (2.00 pts) Give the event below:

33. (1.00 pts) Give the formation and location (which state of what country) of the formation:

34. (2.00 pts) Give the element:

- ☐ A) Iron
- ☐ B) Copper
- ☐ C) Uranium
- ☐ D) Iridium
- ☐ E) Francium

35. (1.00 pts) Give the name of the scientist:

- ☐ A) Othniel Marsh and Cope
- ☐ B) Mary Anning
- ☐ C) Walter or Luis Alvarez
- ☐ D) Barnum Brown
- ☐ E) Walter White

☐ F) Jack Horner

36. (4.00 pts) *Tiebreaker* Give your calculations in the space below:

Station 7 : Nerd War

37. (1.00 pts) Name the man in the image:

38. (2.00 pts) Give your answer below:

39. (3.00 pts) Identify the order and discuss the misrepresentation below:

40. (1.00 pts) Did they evolve gills?

☐ True ☐ False

41. (3.00 pts) The length of the neck (for the long-necked group) usually...

- ☐ A) longer than the length of the body.
- ☐ B) about equal to the length of the body.
- ☐ C) shorter than the length of the body.

Station 8 : Atomic Anomalies

42. (2.00 pts) Name the process:

43. (3.00 pts) Give the example element and what it produces:

44. (1.00 pts) Is the decay accomplished through the process seen in the video?

- ☐ A) Yes
- ☐ B) No

45. (2.00 pts) How many years will have passed, and what is the expected concentration?

46. (2.00 pts) What organism could this be?

Station 9 : Out on a Limb

47. (3.00 pts) Identify the genus of the organisms in each box. 'A' in the left box, 'B' in the middle, 'C' on the right.

48. (1.00 pts) When did it go extinct?

49. (2.00 pts) Which of the three organisms matches with the fin?

- ☐ A) Organism A
- ☐ B) Organism B
- ☐ C) Organism C

50. (4.00 pts) ***Tiebreaker*** Explain what a transition species is:

Station 10 : The Ancient World

51. (2.00 pts) What defines Arkose?

52. (2.00 pts) The monuments were constructed of...

53. (3.00 pts) Give the genus and the etymology of the name:

54. (3.00 pts) Identify the plant and explain the meaning and history behind the name.

Station 11 : TheOddOneOut

55. (1.00 pts) Name the class:

56. (2.00 pts) Give the defining characteristics of the class:

57. (1.00 pts) True/False: Is the class extinct?

☐ True ☐ False

58. (1.00 pts) Give the letter and class:

59. (5.00 pts) Identify the genus of organisms A-E:

Station 12 : Not Asteroidea

60. (1.00 pts) Give the organism's class:

61. (2.00 pts) Give the condition here:

62. (2.00 pts) What is the process called?

63. (2.00 pts) This event was known as the...

64. (1.00 pts) The long stalk on organism 'B' is known as a _____. 'B' is a _____ feeder.

65. (2.00 pts) Explain why the the classification as a living fossil is inaccurate:

Station 13 : Claw on This

66. (2.00 pts) Identify the two samples below:

67. (1.00 pts) Which sample matches the creature in the video?

- ☐ A) Sample A
- ☐ B) Sample B
- ☐ C) Sample C

68. (3.00 pts) Explain the dietary differences below:

69. (2.00 pts) Identify the species:

70. (2.00 pts) Explain why 'B' is responsible for the extinction of one of the other organisms.

Station 14 : Continental Drift

71. (2.00 pts) Give continent 'A' and then give continent 'B'.

72. (2.00 pts) Name the formation:

73. (3.00 pts) About how long ago did it appear and when did it disappear?

74. (3.00 pts) *Tiebreaker* Where would you find greater genetic diversity?

- ☐ A) South Africa
- ☐ B) Canada

Station 15 : Rocky Roads

75. (2.00 pts) Define the term:

76. (3.00 pts) Identify the locations. Please label them appropriately:

77. (2.00 pts) Is the statement true or false?

☐ True ☐ False

78. (1.00 pts) Identify the genus:

79. (1.00 pts) Name the state:

80. (1.00 pts) Order the locations. Concatenate the letters (For example, BAC). Oldest on the left and most recent on the right.

Station 16 : Deep Blue, Part Two

81. (1.00 pts) Identify what 'A' indicates:

82. (1.00 pts) Identify what 'B' indicates:

83. (1.00 pts) Identify what 'C' indicates:

84. (3.00 pts) Identify the purpose of 'C':

85. (1.00 pts) Identify the genus shown in the video.

86. (1.00 pts) Identify sample 'X':

87. (1.00 pts) Identify sample 'Y':

88. (1.00 pts) Is this sexual dimorphism? Answer True or False:

☐ True ☐ False

Station 17 : Cutting Edge

89. (3.00 pts) Identify all three organisms. Put them in each box from left to right as seen in the video ('A' is on the left and 'C' is on the right):

90. (3.00 pts)

Enter the number for the tooth that matches video 'A' in the first box, the tooth that matches 'B' in the second box, and the tooth that matches 'C' in the third box. Only enter numbers.

91. (3.00 pts) Organize these by order of appearance, with the most ancient on the left and most recent on the right

92. (1.00 pts) *Tiebreaker* Give your explanation below:

Station 18 : A Millenia in the Making

93. (4.00 pts) Order all from most ancient to most recent and make sure to concatenate your answer:

94. (2.00 pts) Name the stratigraphic law:

95. (1.00 pts) They indicate...

96. (3.00 pts) Define an angular unconformity and say whether the E/D divide is one.

Station 19 : You are Gone!

97. (2.00 pts) Identify the organism from the video:

98. (2.00 pts) Identify the subphylum:

99. (1.00 pts) Identify the phylum:

100. (3.00 pts) Name the chemical compound:

101. (2.00 pts) Give your explanation here:

Station 20 : Dino Shuffle

102. (1.00 pts) Identify the genus of 'A' and then the genus of 'B':

103. (1.00 pts) Identify the suborder of 'C' and genus of 'D':

104. (1.00 pts) Identify the genus of 'E' and order of 'F':

105. (2.00 pts) Did 'F' lay eggs? How do we know?

106. (1.00 pts) Which is out of place and why?

107. (1.00 pts) Were they swimmers? If so, how long did they spend swimming?

108. (3.00 pts) Give the picture number, identify the picture's genus, and name the supercontinent.

Station 21 : Free for All

109. (10.00 pts) *Tiebreaker* Identify as many as you can!

110. (0.10 pts)

Final Tiebreaker/Bonus Question

Spongebob Squarepants is, as his name implies, a Sponge (Phylum Porifera). In real life, Spongebob would be classified as genus *Aplysina*. However, this reality aside, which of the two genres on your fossils list is he most similar to, *Hydnoceras* or *Astraeospongia*? This is a bonus question, so there is no wrong answer. You can use what you know about sponges, anything from the video below, or any knowledge you might have about Spongebob and his pals to construct your answer. Points are given for thoroughness, creativity, and funniness of a response. This question awards no points on the actual exam, but the score you get on this question will be used to break any significant ties, so make sure to go all out if you have time!



Please fill out the test feedback form (<https://forms.gle/zmNm27mU3vZ7pXVv7>) if possible.

Make sure all answers are submitted, best of luck with the rest of the competition!