

Instructions (shown before students start the test)

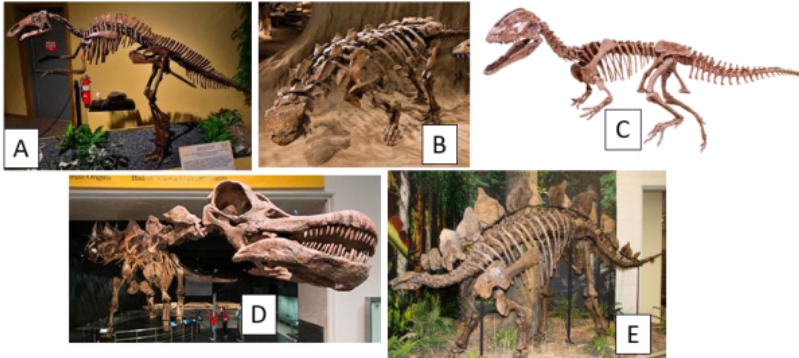
- Welcome to Fossils!
- Per Texas Science Olympiad rules, you must have printed notes for this event. If you are communicating with your partner through a voice or video call, please start it before you begin the test itself.
- Significant time spent outside of the browser window is grounds for a penalty or disqualification per TSO policies.

Introduction (shown after students start the test)

Per Texas Science Olympiad rules, you must have printed notes for this event. If you are communicating with your partner through a voice or video call, please start it before you begin the test itself.

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Station 1



1. (1.00 pts) Identify Fossil A to the most specific taxonomic level required by the Official List.

2. (1.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

3. (1.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

4. (1.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

5. (1.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

6. (1.00 pts) How many unique taxonomic infraorders are represented by the fossils shown?

- ☐ A) 1
- ☐ B) 2
- ☐ C) 3
- ☐ D) 4
- ☐ E) 5

7. (2.00 pts) Which of the fossils shown appeared most recently in the fossil record? During what geologic time period did it appear?

8. (2.00 pts) Which if the following fossils, if any, was/were NOT herbivore(s)?

(Mark **ALL** correct answers)

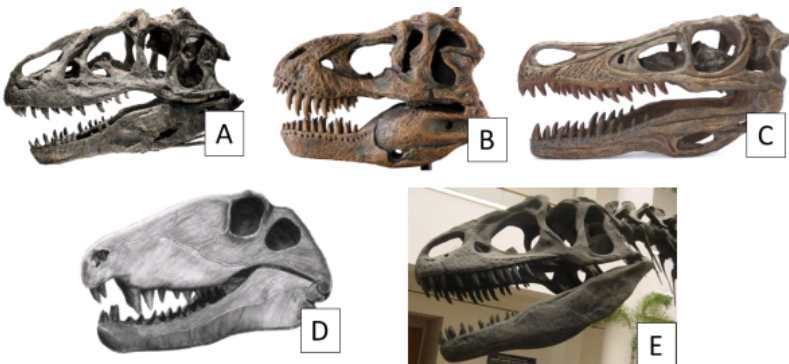
- ☐ A) A
- ☐ B) B
- ☐ C) C
- ☐ D) D
- ☐ E) E

9. (1.00 pts) How did Fossil A incubate its eggs?

10. (1.00 pts) T/F: Fossil B is known for having been an exceptionally social vertebrate.

☐ True ☐ False

Station 2



11. (1.00 pts) Identify Fossil A to the most specific taxonomic level required by the Official List.

12. (1.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

13. (1.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

14. (1.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

15. (1.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

16. (1.00 pts) How many unique taxonomic genera are represented by the images?

- ☐ A) 1
- ☐ B) 2
- ☐ C) 3
- ☐ D) 4
- ☐ E) 5

17. (1.00 pts) T/F: Images A and B represent a male and a female of the same genus.

- ☐ True ☐ False

18. (1.00 pts) T/F: All of the fossils shown became extinct during the K-T extinction event.

- ☐ True ☐ False

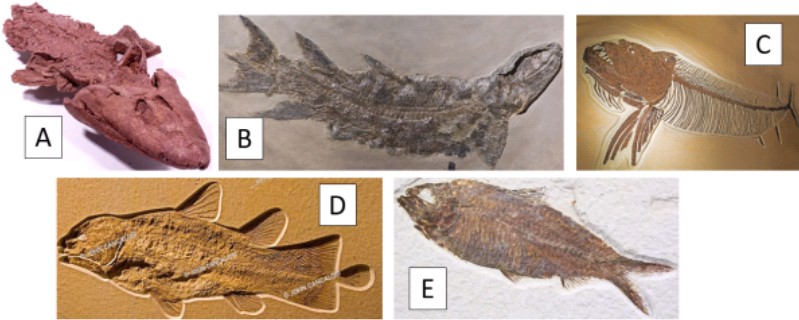
19. (1.00 pts) Describe Fossil C's typical diet.

20. (1.00 pts) Which of the fossils shown, if any, were quadrupedal?

(Mark **ALL** correct answers)

- ☐ A) A
- ☐ B) B
- ☐ C) C
- ☐ D) D
- ☐ E) E
- ☐ F) None of the above

Station 3



21. (1.00 pts) Identify Fossil A to the most specific taxonomic level required by the Official List.

22. (1.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

23. (1.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

24. (1.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

25. (1.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

26. (1.00 pts) How many unique taxonomic classes are represented by the fossils shown?

- ☐ A) 1
- ☐ B) 2
- ☐ C) 3
- ☐ D) 4
- ☐ E) 5

27. (1.00 pts) Approximately how large could members of Group C grow?

- ☐ A) 1m
- ☐ B) 2m
- ☐ C) 3m
- ☐ D) 4m
- ☐ E) 5m
- ☐ F) 6m

28. (1.00 pts) Which of the following fossils, if any, represent extant group(s)?

(Mark **ALL** correct answers)

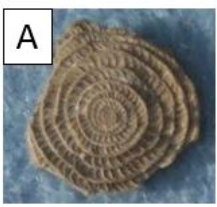
- ☐ A) A
- ☐ B) B
- ☐ C) C
- ☐ D) D
- ☐ E) E

29. (1.00 pts) What was Fossil E's typical diet?

30. (3.00 pts) Which of the following represent tetrapod-like characteristics of Fossil A? Select all that apply.

(Mark **ALL** correct answers)

- ☐ A) Fins
- ☐ B) Gills
- ☐ C) Ribs
- ☐ D) Lungs
- ☐ E) Mobile neck
- ☐ F) Scales



31. (1.00 pts) Identify Fossil A to the most specific taxonomic level required by the Official List.

32. (1.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

33. (1.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

34. (1.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

35. (1.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

36. (1.00 pts) T/F: Fossils D and E represent males and females of the same taxonomic group.

☐ True ☐ False

37. (2.00 pts) Which of the following images, if any, represent extant group(s)?

(Mark **ALL** correct answers)

- ☐ A) A
- ☐ B) B
- ☐ C) C
- ☐ D) D
- ☐ E) E

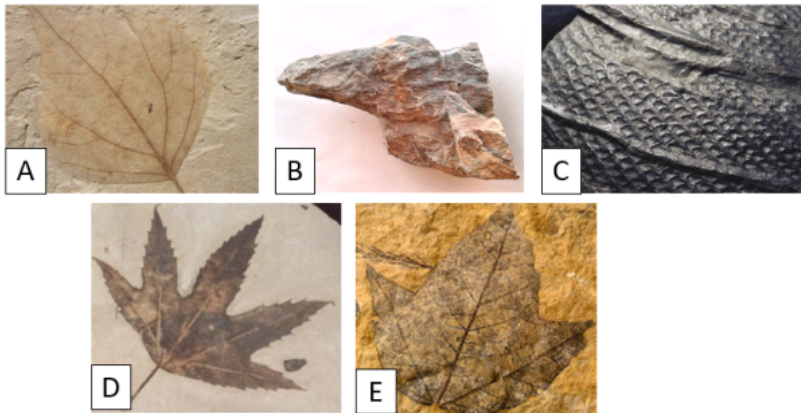
38. (1.00 pts) Explain the etymology of Fossil B's scientific name.

39. (1.00 pts) T/F: Complete specimens of Fossil E are rare due to its brittle nature.

☐ True ☐ False

40. (1.00 pts) What is the technical term for Fossil D's internal shell?

Station 5



41. (1.00 pts) Identify Fossil A to the most specific level required by the Official List.

42. (1.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

43. (1.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

44. (1.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

45. (1.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

46. (1.00 pts) In what habitat does/did Fossil C live?

47. (2.00 pts) What feature of Fossil B is most commonly fossilized? What function does/did this component serve?

48. (2.00 pts) How many times did Fossil C reproduce during its life? What is the technical term for this method of reproduction?

49. (1.00 pts) T/F: Fossil E was incredibly widespread due to its ability to reproduce both sexually and asexually.

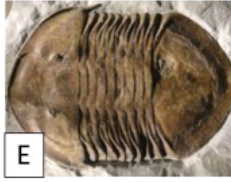
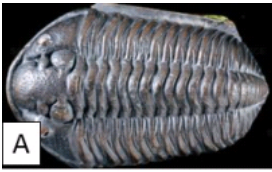
☐ True ☐ False

50. (1.00 pts) Which of the fossils shown, if any, represent the only living genus in its family? Select all that apply.

(Mark **ALL** correct answers)

- ☐ A) A
- ☐ B) B
- ☐ C) C
- ☐ D) D
- ☐ E) E
- ☐ F) None of the above

Station 6



51. (1.00 pts) Identify Fossil A to the most specific taxonomic level required by the Official List.

52. (1.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

53. (1.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

54. (1.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

55. (1.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

56. (1.00 pts) Explain the etymology of Fossil A's scientific name.

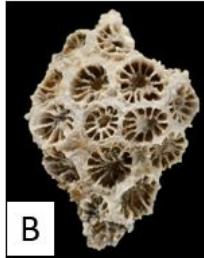
57. (3.00 pts) From oldest to most recent, in what order did these fossils appear in the fossil record? (Ex: G, H = J, L, I)

58. (1.00 pts) In what US state is Fossil C commonly found?

59. (1.00 pts) Which of the images depicts a taxonomic group containing the largest complete trilobite fossil ever found?

60. (1.00 pts) How many segments did Fossil A's thorax typically contain?

Station 7



61. (1.00 pts) Identify Fossil A to the most specific taxonomic level required by the Official List.

62. (1.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

63. (1.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

64. (1.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

65. (1.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

66. (2.00 pts) How many unique taxonomic classes are represented by the images shown?

- ☐ A) 1
- ☐ B) 2
- ☐ C) 3
- ☐ D) 4
- ☐ E) 5

67. (1.00 pts) During what geologic time period did Fossil A first appear in the fossil record?

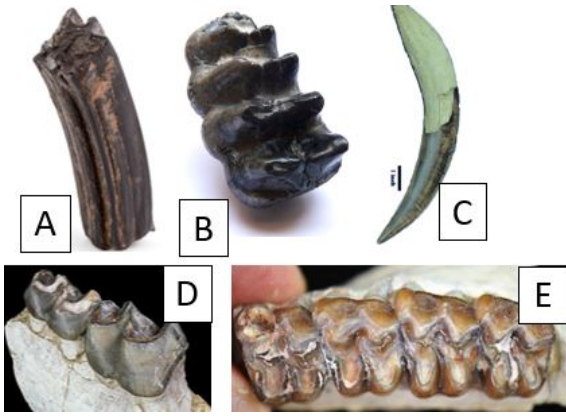
68. (1.00 pts) What is the technical term for the line between Fossil C's two shells?

69. (1.00 pts) In what habitat was/is Fossil D typically found?

70. (1.00 pts) Was/is Fossil B found as individuals or in a colony?

- ☐ A) Individual

Station 8



71. (2.00 pts) Identify Fossil A to the most specific taxonomic level required by the Official List. What part of Fossil A's body is shown in the image?

72. (2.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

73. (2.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

74. (2.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

75. (2.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

76. (1.00 pts) What does Fossil C's shape suggest about its diet?

77. (1.00 pts) How many unique taxonomic class(es) is/are represented in the images shown?

- ☐ A) 1
- ☐ B) 2
- ☐ C) 3
- ☐ D) 4
- ☐ E) 5

78. (1.00 pts) Which of the fossils shown, if any, represent extant species?

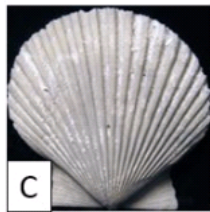
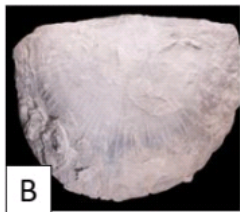
(Mark **ALL** correct answers)

- ☐ A) A
- ☐ B) B
- ☐ C) C
- ☐ D) D
- ☐ E) E

79. (1.00 pts) Describe Fossil E's typical diet.

80. (1.00 pts) During what geologic epoch did Fossil D first appear in the fossil record?

Station 9



81. (1.00 pts) Identify Fossil A to the most specific taxonomic level required by the Official List.

82. (1.00 pts) Identify Fossil B to the most specific taxonomic level required by the Official List.

83. (1.00 pts) Identify Fossil C to the most specific taxonomic level required by the Official List.

84. (1.00 pts) Identify Fossil D to the most specific taxonomic level required by the Official List.

85. (1.00 pts) Identify Fossil E to the most specific taxonomic level required by the Official List.

86. (1.00 pts) How many unique taxonomic phyla is/are represented by the fossils shown?

- ☐ A) 1
- ☐ B) 2
- ☐ C) 3
- ☐ D) 4
- ☐ E) 5

87. (1.00 pts) What is the function of a lophophore?

88. (2.00 pts) Which fossils shown belong to a phylum of which most members possess a lophophore? Select all that apply.

(Mark **ALL** correct answers)

- ☐ A) A
- ☐ B) B
- ☐ C) C
- ☐ D) D

☐ E) E

89. (1.00 pts) During which geologic period did Fossil D first appear in the fossil record?

90. (1.00 pts) T/F: Both Fossils A and B were/are epifaunal species.

☐ True ☐ False

Station 10

(No images)

91. (2.00 pts) Why are fossils more likely to form if the dead organism is buried in an anoxic environment?

92. (2.00 pts) What is the difference between an index fossil and a zone fossil?

93. (1.00 pts) What is the evolutionary significance of stromatolites?

94. (1.00 pts) When were the earliest stromatolites formed?

95. (1.00 pts) Which of the following geologic periods both began and ended with a mass extinction event? Select all that apply.

(Mark **ALL** correct answers)

- ☐ A) Ordovician
- ☐ B) Silurian
- ☐ C) Cretaceous
- ☐ D) Triassic

96. (1.00 pts) Genus Lystrosaurus is famous for having survived which mass extinction event?

97. (2.00 pts) What are two characteristics that make a group a good index fossil?

98. (1.00 pts) T/F: Dinosaurs had prehensile hands.

☐ True ☐ False

99. (1.00 pts) Pyritization and silification are sub-types of which mode of preservation?

100. (2.00 pts) What is the difference between a cast and a mold?

We hope you enjoyed this exam! If you have any feedback about any of the exams at this tournament, please let us know through this form: <https://tinyurl.com/utreg21feedback> (<https://tinyurl.com/utreg21feedback>)