

# Life on Earth

## Topic Test

### Multiple Choice Questions

Select the **best** alternative and indicate your response on the answer sheet. (1 mark each)

1. The list below contains common substances that exist in Earth's present day atmosphere.

1. methane
2. oxygen
3. nitrogen
4. ammonia
5. water vapour
6. hydrogen
7. carbon dioxide

Which of the substances from the list were thought to be the most abundant in the Earth's early atmosphere?

- A. 4, 5, 6, 2
  - B. 1, 4, 5, 6
  - C. 3, 4, 5, 6
  - D. 2, 3, 4, 7
2. Which of the following would have the most characteristics in common?
- A. two species in different orders
  - B. two phyla in the same kingdom
  - C. two species in the same genus
  - D. two orders in the same class
3. Stromatolites are colonial structures consisting of layers of:
- A. prokaryotic organisms
  - B. single celled fungi
  - C. eukaryotic organisms
  - D. amino acids
4. A fossil cast is formed when:
- A. an impression is left in sediment by an organism
  - B. a mould is later filled with other materials
  - C. remains are preserved in ice
  - D. an organism is preserved in tree resin
5. Before photosynthetic prokaryotes evolved, which of the following was not present in Earth's atmosphere?
- A. ammonia
  - B. water vapour
  - C. oxygen
  - D. hydrogen

6. The binomial system of nomenclature was introduced by:
- A. Harold Urey
  - B. Carolus Linnaeus
  - C. J.B.S Haldane
  - D. A.I Oparin
7. When classifying organism a hierarchical system is used. The following list contains the scrambled names of this system.

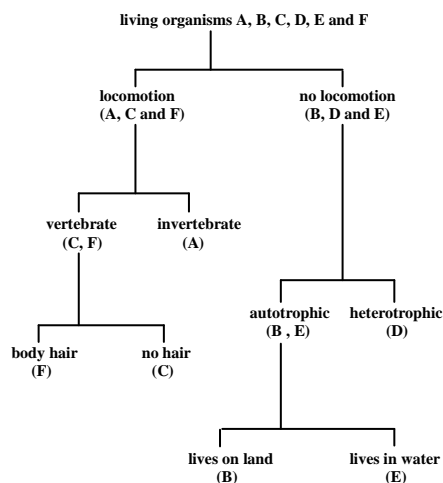
- 1. order
- 2. class
- 3. species
- 4. family
- 5. kingdom
- 6. phylum
- 7. genus

The correct order from the most general form of classification to the most specific is:

- A. 5, 6, 2, 7, 1, 3, 4
  - B. 3, 7, 4, 1, 2, 6, 5
  - C. 5, 4, 6, 7, 2, 1, 3
  - D. 5, 6, 2, 1, 4, 7, 3
8. Methanogens are procaryotic organisms that live in:
- A. anerobic environments such as the intestinal tract of animals or mud at the bottom of swamps
  - B. salty environments such as the open ocean
  - C. mutualistic relationships with other organisms
  - D. cold environments
9. What is the main criteria used when constructing a classification key?
- A. habitat
  - B. structural characteristics
  - C. behavioural characteristics
  - D. diet
10. The archaeobacteria that live in saline environments like the Dead Sea are:
- A. thermophiles
  - B. psychrophiles
  - C. halophiles
  - D. macrophiles
11. Life is thought to have evolved on Earth around:
- A. 3 800 000 000 years ago
  - B. 400 000 000 years ago
  - C. 380 000 000 years ago
  - D. 4 6000 000 000 years ago

12. The most convincing evidence that organisms have evolved from simpler pre-existing organisms is provided by:
- the geographical distribution of organisms
  - the age of the Earth
  - the present-day existence of prokaryotes
  - the fossil record
13. The classification of living things is useful because it:
- shows the path of evolutionary change
  - makes communication easier
  - provides a genus and a species name for every organism
  - all of the above
14. An important role of nitrogen fixing bacteria is to:
- release oxygen into the atmosphere
  - produce useable compounds such as ammonia and nitrates that can be absorbed by plants
  - convert hydrogen and sulphur into hydrogen sulfide and energy
  - decompose organic matter and return nutrients to the soil
15. Which of the following provides geological evidence for the accumulation of oxygen in the atmosphere around 2 billion years ago?
- fossil stromatolites
  - deep sea hydrothermal vents
  - banded iron formations
  - all of the above
16. One difference between the plant kingdom and monera kingdom is:
- plants have a cell wall, monera do not
  - plants carry out photosynthesis, monera do not
  - plant cells have ribosomes, those of monera do not
  - plant cells have a true nucleus, but the cells of monera do not

17. The key below shows groups of living organism A, B, C, D, E and F.



Into which group would you place yourself?

- A. (B)
- B. (C)
- C. (F)
- D. (A)

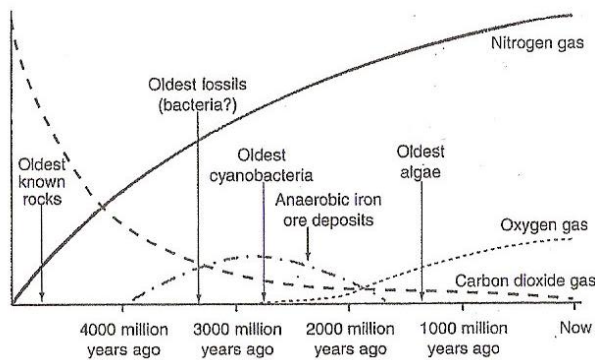
18. It is difficult to find evidence on the original of life on Earth because:

- A. the earliest known fossils are all the same
- B. the early ocean did not form until about 2 000 million years ago
- C. early life forms were soft bodied and formed few fossils
- D. there are few terrestrial fossils

19. Which instrument would be most useful for viewing the earliest fossils of life on Earth?

- A. electron microscope
- B. mass spectrometer
- C. light microscope
- D. telescope

20. The graph below shows hypothesised changes in the atmosphere over time.



Based on the information in the graph which of the following statements is NOT true?

- A. an increase in oxygen gas coincided with the appearance of cyanobacteria
- B. the oldest fossils are about 3.4 billion years old
- C. the amount of nitrogen gas in the atmosphere has increased over time
- D. the amount of carbon dioxide in the atmosphere has increased over time

21. Which of the following is MOST likely to have occurred on Earth 1.5 billion years ago?

- A. the formation of organic molecules
- B. the appearance of eukaryotic cells
- C. the appearance of multicellular organisms
- D. the appearance of prokaryotic heterotrophic cells

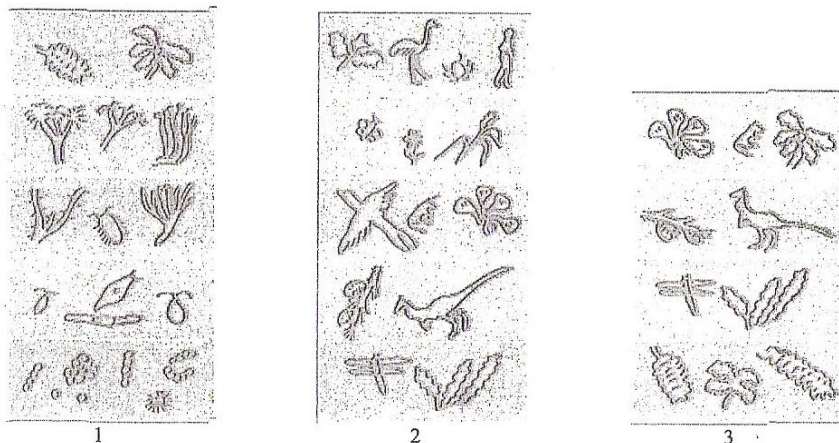
22. The study of fossils is called:

- A. palaeontology
- B. palaeobiology
- C. palaeogeology
- D. geology

23. Eubacteria include:

- A. thermophiles and psychrophiles
- B. Archaea
- C. nitrogen fixing bacteria and cyanobacteria
- D. halobacterium

24. 1, 2 and 3 are rock strata from three different locations.



The three locations in sequence from the strata containing the oldest rocks to the strata containing the youngest is:

- A. 1, 2, 3
- B. 2, 3, 1
- C. 1, 3, 2
- D. 3, 1, 2

25. Panspermia is the name given to the theory that life originated from:

- A. undersea thermal vents
- B. a primordial soup
- C. the ocean
- D. an extra-terrestrial source



28. Briefly outline two ways in which technology has contributed to our understanding of the origin and evolution of life on Earth. (4 marks)

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29. Rearrange the following in the order in which they appeared on Earth. (4 marks)

**colonial organisms, procaryotic heterotrophic cells, eucaryotic cells, multicellular organisms, membranes, organic molecules, procaryotic autotrophic cells.**

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30. Describe Oparin and Haldane's hypothesis about the origins of organic molecules on the Earth. (3 marks)

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31. Explain how this hypothesis was tested experimentally and name the scientists involved in this experiment. (6 marks)

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**END OF TEST**

# Life on Earth

## Topic Test

### Multiple Choice Answer Sheet

Name: \_\_\_\_\_

1. A B C D
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
9. A B C D
10. A B C D
11. A B C D
12. A B C D
13. A B C D
14. A B C D
15. A B C D
16. A B C D
17. A B C D
18. A B C D
19. A B C D
20. A B C D
21. A B C D
22. A B C D
23. A B C D
24. A B C D
25. A B C D