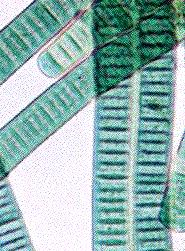
COMPREHENSION EXERCISE 3

Read the following passage and then answer the questions that follow:-

CYANOBACTERIA – ARCHITECT’S OF THE EARTH’S ATMOSPHERE

Cyanobacteria are aquatic and [photosynthetic](http://www.ucmp.berkeley.edu/glossary/gloss3/pigments.html) and because they are bacteria, they are quite small and usually unicellular, though they often grow in colonies large enough to see. They have the distinction of being the oldest known fossils, more than 3.5 billion years old, in fact! It may surprise you then to know that the cyanobacteria are still around; they are one of the largest and most important groups of [bacteria](http://www.ucmp.berkeley.edu/bacteria/bacteria.html) on earth.

They are particularly abundant in the oceans and are primary producers. They produce carbohydrate from carbon dioxide and are also capable of nitrogen fixation. Life on earth owes a great debt to this group of bacteria as the oxygen released by them over the millennia, as a by-product of photosynthesis, provided the stimulus for the evolution of more complex life forms. In addition, cyanobacteria are the ancestors of chloroplasts, the photosynthetic organelle of today’s algae and plants.

The cyanobacteria, as the most abundant photosynthetic organisms in the ocean, sit at the base of the food chain and support immense food webs in the ocean. About half of the global nitrogen fixation occurs in the ocean and cyanobacteria are responsible for most of this. Cyanobacteria can form symbiotic relationships with many organisms for example marine sponges. These sponges are of interest as they produce a wide variety of compounds with anti-viral and anti-cancer properties.

(Adapted from *Cyanobacteria in Microbiology Today May 2010* ***and*** *http://www.ucmp.berkeley.edu/bacteria/cyanointro.html)*

1. What is the habitat of the cyanobacteria?
2. Explain the underlined terms.
3. Cyanobacteria are photosynthetic. Write a balanced chemical equation for the process of photosynthesis.
4. Apart from photosynthesis give one other biochemical role for cyanobacteria mentioned in the passage.
5. What was the part played by cyanobacteria in the evolution of life on earth?
6. Suggest how increased levels of CO2 in the atmosphere may affect populations of cyanobacteria in the oceans.
7. Why are the marine sponges of interest?
8. Name two diseases caused by viruses and explain why developing compounds with anti-viral properties is of major importance.
9. These sponges may also produce anti-cancer compounds. What is cancer and give 2 causes of it.
10. Name the scientists who proposed the Theory of Evolution.

3