

## Biology Questions

1. Which of the following sentences is true?

- A. All organisms begin life as a single cell.
- B. Organisms begin life as multi-cellular.
- C. Some organisms begin life as a single cell and others as multi-cellular.
- D. None of the above.

2. Scientists suggest that \_\_\_\_\_ has occurred through a process called \_\_\_\_\_.

- A. evolution/differentiation
- B. evolution/natural selection
- C. natural selection/homeostasis
- D. homeostasis/reproduction

3. What are the two types of measurement important in science?

- A. quantitative and numerical
- B. qualitative and descriptive
- C. numerical and scientific
- D. quantitative and qualitative

4. A normal human sperm must contain:

- A. an X chromosome.
- B. a Y chromosome.
- C. 23 chromosomes.
- D. B and C.
- E. A, B, and C.

5. All living organisms on Earth utilize:

- A. oxygen.
- B. light.
- C. sexual reproduction.
- D. neurotransmitters.
- E. a triplet genetic code.

6. The major advantage of sexual reproduction over asexual forms is that:

- A. it requires two individuals.
- B. it promotes diversity.
- C. it produces more offspring.

- D. it can be undertaken at any time of year.
- E. it involves chromosomes.

7. What is the second part of an organism's scientific name?

- A. species
- B. phylum
- C. population
- D. kingdom

8. What is the name of the process by which a bacterial cell splits into two new cells?

- A. mitosis
- B. meiosis
- C. replication
- D. fission

9. Which of the following is not found within a bacterial cell?

- A. mitochondria
- B. DNA
- C. vesicles
- D. ribosomes

### **Biology Answers**

1. **A:** All organisms begin life as a single cell.

2. **B:** Scientists suggest that evolution has occurred through a process called natural selection.

3. **D:** The two types of measurement important in science are quantitative (when a numerical result is used) and qualitative (when descriptions or qualities are reported).

4. **C:** A normal sperm must contain one of each of the human chromosome pairs. There are 23 chromosome pairs in all. Of these, 22 are autosomal chromosomes, which do not play a role in determining gender. The remaining pair consists of either two X chromosomes in the case of a female or of an X and a Y chromosome in the case of a male. Therefore, a normal sperm cell will contain 22 autosomal chromosomes and either an X or a Y chromosome, but not both.

5. **E:** All living organisms on Earth utilize the same triplet genetic code in which a three-nucleotide sequence called a codon provides information corresponding to a particular amino acid to be added to a protein. In contrast, many organisms, especially certain types of bacteria, do not use oxygen. These organisms live in oxygen-poor environments and may produce energy through fermentation. Other organisms may live in dark environments, such as in caves or deep underground. Many

organisms reproduce asexually by budding or self-fertilization, and only the most evolutionarily advanced organisms make use of neurotransmitters in their nervous systems.

**6. B:** Sexual reproduction allows the genetic information from two parents to mix. Recombination events between the two parental copies of individual genes may occur, creating new genes. The production of new genes and of new gene combinations leads to an increase in diversity within the population, which is an advantage in terms of adapting to changes in the environment.

**7. A:** The second part of an organism's scientific name is its species. The system of naming species is called binomial nomenclature. The first name is the genus, and the second name is the species. In binomial nomenclature, species is the most specific designation. This system enables the same name to be used globally so that scientists can communicate with one another. Genus and species are just two of the categories in biological classification, otherwise known as taxonomy. The levels of classification, from most general to most specific, are kingdom, phylum, class, order, family, genus, and species. As shown, binomial nomenclature includes only the two most specific categories.

**8. D:** Fission is the process of a bacterial cell splitting into two new cells. Fission is a form of asexual reproduction in which an organism divides into two components; each of these two parts will develop into a distinct organism. The two cells, known as daughter cells, are identical. Mitosis, on the other hand, is the part of eukaryotic cell division in which the cell nucleus divides. In meiosis, the homologous chromosomes in a diploid cell separate, reducing the number of chromosomes in each cell by half. In replication, a cell creates duplicate copies of DNA.

**9. A:** Bacterial cells do not contain mitochondria. Bacteria are prokaryotes composed of single cells; their cell walls contain peptidoglycans, and the functions normally performed in the mitochondria are performed in the cell membrane of the bacterial cell. DNA is the nucleic acid that holds the genetic information of the organism. It is shaped as a double helix. DNA can reproduce itself and can synthesize RNA. A vesicle is a small cavity containing fluid. A ribosome is a tiny particle composed of RNA and protein in which polypeptides are constructed.