Living Environment

Unit 6: Where do babies come from?

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

**HW 28 Cloning**

**Directions: Use your notes from class and knowledge of biology to answer each question.**

1. Cloning an individual usually produces organisms that

(1) contain a variety of DNA (3) are identical in appearance and behavior

(2) contain identical genes (4) produce enzymes different from the parent

2. Which phrase does *not* describe cells cloned from a carrot?

(1) they were produced asexually (3) they are produced sexually

(2) they are genetically identical (4) they have the same DNA codes

3. From a single monkey, an animal breeder claims that he has successfully cloned two monkeys. He displays the two monkeys, a male and a female, to the public. The claim of the breeder should be rejected because the monkeys

(1) are twins (3) are of two different sexes

(2) have the same parents (4) developed from more than one sperm cell

4. Individual cells can be isolated from a mature plant and grown with special mixtures of growth hormones to produce a number of genetically identical plants. This process is known as

(1) cloning (3) recombinant DNA technology

(2) meiotic division (4) selective breeding

5. A biologist at an agricultural laboratory is asked to develop a better quality blueberry plant. He is given plants that produce unusually large blueberries and plants that produce very sweet blueberries. The biologist is successful in producing the new plant. State *one* method that can be used to produce many identical blueberry plants of this new type. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Which statement **best** describes a population of organisms if cloning is the only method used to reproduce this population?

(1) The population would be likely to survive changing environmental conditions.

(2) There would be little chance for variation within the population.

(3) The population would resort to autotrophic nutrition.

(4) The mutation rate in the population would be rapid.

7. Steps in a reproductive process used to clone a sheep with certain traits are listed below.

Step 1 — The nucleus was removed from an unfertilized egg taken from sheep A.

Step 2 — The nucleus of a body cell taken from sheep B was then inserted into this unfertilized egg from sheep A.

Step 3 — The resulting cell was then implanted into the uterus of sheep C.

Step 4 — Sheep C gave birth to sheep D.

Which sheep would be most genetically similar to sheep D?

(1) sheep A, only (2) sheep B, only (3) both sheep A and B (4) both sheep A and C

8. Cellular communication is essential for maintaining homeostasis. Cells of the female reproductive system, for example, must be in constant communication. Identify the hormone responsible for thickening the uterine lining during pregnancy and explain how this chemical signal reaches the targeted uterine cells. [1]

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**Directions: Use your notes from class and knowledge of biology to answer each question.**

1. A human is a complex organism that develops from a zygote. Briefly explain the steps in this developmental process. In your answer be sure to:

* Explain how a zygote is formed [1]
* Identify one developmental process involved in the change from a zygote into an embryo [1]
* Identify the structure in which fetal development usually occurs [1]
* Identify one factor that can affect fetal development [1]

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Base your answers to questions 2-4 on the diagram below and on your knowledge of biology. The diagram represents a single celled organism, such as an amoeba, undergoing the changes shown.



2. As a result of these processes, the single-celled organism accomplishes [1]

(1) gamete production (3) sexual reproduction

(2) energy production (4) asexual reproduction

3. Process 1 is known as [1]

(1) replication (3) differentiation

(2) meiosis (4) digestion

4. Process 1 and process 2 are directly involved in [1]

(1) meiotic cell division (3) fertilization

(2) mitotic cell division (4) recombination

5. A woman develops skin cancer as a result of too much exposure to the sun’s UV rays without wearing sunscreen. She wants to have children and worries that they too will have skin cancer. Explain why the mutation that lead to cancer in her skin cells will not be passed on to her offspring. [1]

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6. Dogs are often referred to as “man’s best friend”. Therefore, when a dog passes away, many pet-lovers experience extreme grief. Some say that cloning may be the solution to this issue. Although the cloned dogs would be genetically identical, explain why they may not be physically identical to the original dog. [1]

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