Quiz: Genetic Engineering

Read each question. Circle the letter of the correct answer.

1. What is the end goal of PCR?

A. determine the order of bases in DNA

B. determine the risk for a genetic disorder

C. replace damaged DNA with undamaged DNA

D. obtain large amounts of identical sequences of DNA

2. What is the name for an organism that contains one or more genes from another organism?

A. clone

B. clone

C. transgenic

D. combination

3. Which of the following would not be considered an application of genetic engineering?

A. creating Dolly the sheep (a clone)

B. creating herbicide-resistant crop plants

C. creation of bacteria that produce human insulin

D. creating Atlantic salmon that contain a gene from Chinook salmon

4. Which statement about polymerase chain reaction (PCR) is true?

A. occurs inside bacteria

B. builds new polymerases

C. produces RNA segments

D. requires primers and nucleotides

5. What is the term for human guidance of adaptations in threatened populations?

A. rapid adaptation

B. human adaptation

C. guided adaptation

D. facilitated adaptation

6. DNA microarrays can be used to compare different cell types by showing _____.

A. functions of proteins

B. very small DNA fragments

C. patterns of gene expression

D. recombinant DNA sequences

7. The main purpose of genetic testing for changes in chromosomes, genes, or proteins is to _____.

A. look for the natural variation in DNA

B. prevent genetic discrimination by employers

C. assess the risk of having or carrying a genetic condition or disorder

D. restrict carriers from ever passing on genetic conditions to newborns

8. In PCR, what is the purpose of raising the temperature to 95° in the thermocycler?

A. to copy the DNA strands

B. to separate the DNA strands

C. to bind the primers to the DNA strand

D. to copy and bind primers to the DNA strand

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9. Which of the following is not a process that produces clones?

A. binary fission

B. nuclear transfer

C. embryo twinning

D. recombinant DNA

10. What is the purpose of CRISPR?

A. accurately cut DNA

B. make many copies of DNA

C. place a plasmid inside a cell

D. replace old DNA with new DNA

Read each statement. Write your answer on the lines.

11. PCR is a common technique used in the biology laboratory. What is the goal of PCR, and why is it necessary to place primers into the thermocycler for this process?

12. One of the greatest benefits of genetic engineering has been the manipulation of genes in crop plants such as wheat and soybeans. In what ways can genetic engineering affect agriculture?

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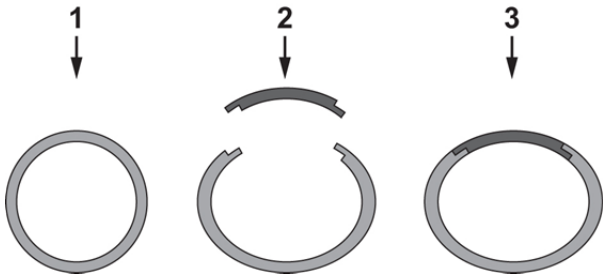
13. What is gene therapy, and what would be an example of a disorder that could be treated with this technology?

Explain your disease choice and how gene therapy could provide treatment.

Directions: Read the passage, then answer the questions that follow.

Gene Technology

The diagram shows the process of one type of gene technology.



14. Give an example of a way the technology in the diagram is currently being used.

15. Based on the diagram, explain how transgenic animals are produced.

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