Evaluate: Biotechnology SCA

INSTRUCTOR:
no_reply@example.com

Part 1: Multiple Choice Questions

1. **Which tool is commonly used to make many copies of specific pieces of DNA for research?**
   - **A.** Gel Electrophoresis
   - **B.** PCR (Polymerase Chain Reaction)
   - **C.** CRISPR-Cas9
   - **D.** DNA Sequencing

2. **What is the main job of gel electrophoresis in studying DNA?**
   - **A.** Making DNA bigger
   - **B.** Separating DNA pieces by size
   - **C.** Changing DNA shapes
   - **D.** Coloring DNA samples

3. **What is CRISPR-Cas9 mostly used for in science?**
   - **A.** Making new DNA
   - **B.** Editing genes
   - **C.** Studying animal cells
   - **D.** Mixing DNA colors

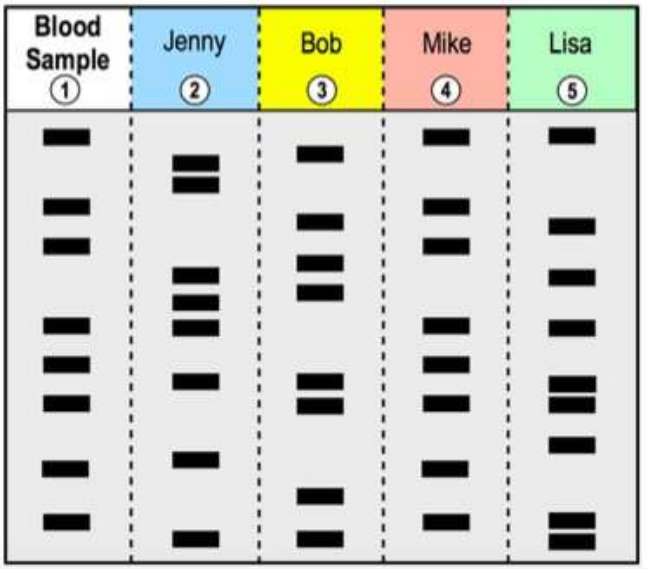
4. **What is one important thing to think about with genetic engineering?**
   - **A.** How much it costs
   - **B.** How tall plants grow
   - **C.** If animals are happy
   - **D.** Keeping people's information private

5. **How might DNA science help farmers grow better crops?**
   - **A.** Making water taste better
   - **B.** Stopping wind from blowing
   - **C.** Growing more food in less space
   - **D.** Painting flowers more colors

6. **Which job does DNA Polymerase have during cell growth?**
   - **A.** Untangling DNA strands
   - **B.** Gluing DNA pieces together
   - **C.** Making new DNA parts
   - **D.** Writing DNA instructions

Part 2: Short Constructed Response Questions

Look at the gel electrophoresis image below.



7. Imagine a scenario where a blood sample collected at a crime scene is analyzed using gel electrophoresis. The sample is compared against DNA samples from individuals named Jenny, Bob, Mike, and Lisa. During analysis, it is observed that some DNA bands match all individuals, indicating shared genetic markers. Only one individual matches. Explain why being a perfect match is significant in the context of forensic investigation and how gel electrophoresis helps in identifying such matches.