Appendix 1: Questions in Pre- and Postexercise Quizzes on Gel Electrophoresis

1. What is electrophoresis?

A. A technique in which molecules like DNA are introduced into bacteria by applying an electric field that creates transient holes in the cell membrane

B. A technique in which noncharged molecules are placed into gel matrix in an electric field

C. A technique in which charged molecules are placed into a gel matrix in an electric field

D. A technique in which a certain form of friction produces a lot of static electricity

2. What are the main components needed for electrophoresis?

A. A power source
B. A gel matrix
C. A medium (or "buffer")
D. A rig (a container for the gel and medium)
E. All of the above

3. For what purpose is DNA electrophoresis used?

A. To amplify a DNA for cloning
B. To separate noncharged molecules of DNA based on size
C. To separate charged molecules of DNA based on size
D. To separate charged molecules of DNA based on amount of positive charge
E. To produce static electricity by friction

4. Which of the following is true regarding electrophoresis and the size of DNA:

A. Because larger DNA molecules have more negative charge, they move farther through the gel than smaller molecules

B. Because smaller DNA molecules have more positive charge, they move less far through the gel than smaller molecules

C. Because larger DNA molecules have less negative charge, they move farther through the gel than smaller molecules

D. Because larger DNA molecules are larger, they move less far through the gel than smaller molecules

E. Because larger DNA molecules have more charge, more electricity is produced

5. What role do ions play in DNA electrophoresis?

A. They carry the current to complete the electrical circuit
B. They keep the gel cool by absorbing excess current
C. They attach to the gel and make it slippery so that the DNA can pass though the gel
D. They participate in noncovalent bonds between the DNA and the gel

6. Which of the following does NOT causes DNA degradation?

A. DNase activity
B. EDTA
C. Low pH
D. Hydrolysis
E. Depurination
F. Oxidation
G. Heat

7. During electrophoresis, which one of the following is true

A. Electrolysis occurs and an equal amount of hydrogen and oxygen is produced
B. Electrolysis occurs and an twice as much hydrogen as oxygen is produced
C. Electrolysis occurs and an twice as much oxygen as hydrogen is produced
D. Electrolysis occurs and an four times as much hydrogen as oxygen is produced
E. Electrolysis occurs and an four times as much oxygen as hydrogen is produced