

Format: 17 multiple choice questions and 5 open ended questions

Concepts to Review:

- DNA Analysis
 - Understand what *DNA* is and where it is found.
 - Be able to describe some of the information that one can learn by analyzing a DNA sample.
 - Be able to explain why DNA is useful in law enforcement.
 - Be able to compare the use of DNA analysis and the use of fingerprint analysis in law enforcement.
 - Be able to describe a molecule a DNA.
 - Understand the terms *gene*, *allele*, *base*, *base pair*, and know the abbreviations for the four DNA bases.
 - Be able to describe *CODIS* and explain how it is used by forensic scientists.
 - Be able to describe the process of *gel electrophoresis* and how it helps separate and compare DNA samples.
 - Be able to explain the role of *restriction enzymes* in gel electrophoresis.
 - Be able to describe the role of *electric currents* in gel electrophoresis and be able to explain why the positive and negative poles are placed where they are relative to the DNA.
 - Be able to explain why *DNA standards* of known sizes are often included in gel electrophoresis.
 - Be able to describe some ways that forensic scientists can maintain a *sterile* laboratory environment while working with DNA.
 - Be able to explain how gel electrophoresis is used for *paternity testing*.
 - Be able to describe the process of *polymerase chain reaction (PCR)* and be able to explain the role of PCR in analyzing DNA samples.
 - Be able to describe some of the *limitations* of DNA analysis.

- Lab Skills
 - Be able to load a gel if given a DNA sample, *micropipette*, and *pipette tips*.
 - Be able to analyze the results of a DNA test if given a gel with banding patterns.

Resources:

You may use your laboratory notebook during the exam, but you may NOT consult any other notes or handouts (your regular class notebook and anything that was not added to your laboratory notebook during our lab work is NOT ALLOWED).

NOTE: You may be given supplies from one of the labs and be asked to demonstrate that you can carry out one of the laboratory procedures we learned in this unit.