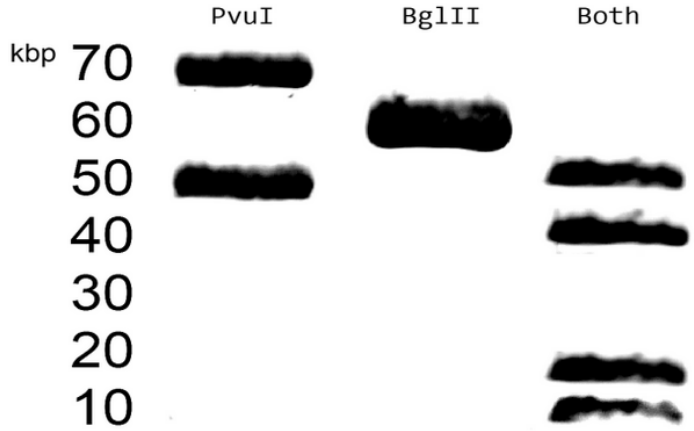
Name _____

Date _____

1. An aliquot of purified plasmid DNA was digested with two restriction enzymes (PvuI and BglII) separately, and then together.
Resulting samples were subjected to electrophoresis, and yielded the picture below:



Draw and annotate a restriction map for the plasmid.

2. What is cell competence? What is the advantage of this mechanism?
How can competence be induced and why is it important for scientists?

3. Suppose you have designed a pair of primers to amplify your target gene from genomic DNA.
What would you do to check if there are other possible targets in the genome?

4. What genome (of what organism) would you sequence if you were to decide?
What would be rationale of your choice?
What is the purpose of sequencing genomes in general?
What biological data do you expect to obtain using genome sequencing?

5. Suggest a strategy for finding recognition sites (if present) of restriction endonucleases in the given DNA sequence:

5’ - AAAGGGCGCGCCTAACGGATCCACCACAAGGTCTCTCAA - 3’
(only one strand shown)

What are possible restriction sites of this sequence according to your suggestion?
Does this strategy apply to all types of restriction endonucleases?

6. What is a pseudogene?
What are possible origins of pseudogenes?

7. Give a definition to epigenetics.
What types of epigenetic modifications do you know?
Describe how they work.