





4. (15 points) I have a 10,000 base pair piece of DNA. When this DNA is cleaved by enzyme A I get 2 fragments, one of 4,500 bp and a second of 5,500 base pairs. When the DNA is cleaved with restriction enzyme B, I get three fragments; 2000, 3000, and 5000 bp long. When I cleave with both enzymes I get four fragments; 1500, 2000, 3000, and 3500 bp long. Make a restriction map for this piece of DNA.

5. (20 points) Describe the transcription of a piece of mRNA in a eukaryotic system. Include important enzymes, sequences, and any additional processing that may occur to make the mRNA ready for translation.

6. (10 points) What are the start and stop codons for protein synthesis?

7. (25 points) Describe the process of charging a t-RNA molecule with an amino acid. Include as many details as possible

(10 points Extra Credit) -Challenge question

Let's say that in the first semester Biochemistry lab we had successfully isolated the trypsin from a buffalo and we determined its sequence using a peptide sequencer. Describe the steps you would take, and the possible problems you would have to deal with to get the protein cloned and expressed in E coli. (Note: this is a wide open question that essentially describes an entire doctoral thesis project - but it is only worth 10 points. Make sure you have the rest of the test under control before you spend time on this)