Chemistry 224	Name
Bioorganic Chemistry	Tuesday, Dec. 19, 2000
Exam 3	100 points

This Exam is closed book and closed notes

Please show all your work!

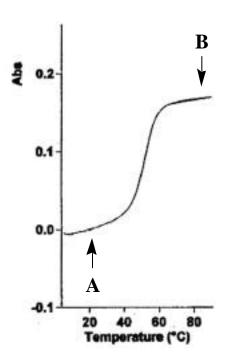
Stereochemistry counts as indicated!

Neatness counts!

It has been a pleasure, Good Luck!!

Happy Holidays! Ho! Ho! etc. 1. Below is a DNA melting curve for the following sequence:

5'- C G G A C A A G A A G -3'
3'- G C C T G T T C T T C -5'



a. Describe the structure of the DNA at the points labled A and B on the melting curve. (5 pts)

b. From the melting curve shown above, what is the approximate melting temperature of the DNA? Please show how you arrived at this number. (5 pts)

c. On the diagram above, draw and label melting curves for DNA more stable and less stable than the one shown. (5 pts)

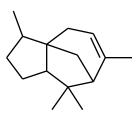
2.	a. Draw the Watson-Crick hydrogen bonds of the DNA bases. unit. (10 pts)	You may use dR for the deoxyribose
	b. On each W-C pair, show the location of the major and minor	or grooves. (5 pts)
3.	For one pyrimidine and one purine, draw a suitable reagent for abbreviate any part of the structures.(10 pts)	solid phase DNA synthesis. Do not

4.	what enzyme is used in polymerase chain reaction (PCR). What is the function of this enzyme and what unique feature does it possess that is critical for the success of PCR. (10 pts)				
5.	Show the reactions carried out by the following enzymes during nucleotide biosynthesis. (10 pts)				
a.	ribonucleotide reductase				
b.	thymidylate synthase				

6.	Give the mechanism for the	conversion of geranyl	pyrophosphate to	farnesyl pyro	phosphate. ((10 p)	ts)
----	----------------------------	-----------------------	------------------	---------------	--------------	--------	-----

- 7. Identify the isoprene units in the following isoprenoid derived natural products. (10 pts)
 - a. cedrene

b. patchouli alcohol



8. Consider the alkaloid shown below. Show the biosynthetic precursors that account for all carbon and nitrogen atoms. (10 pts)

9. Classify the following natural products as a terpene, sesquiterpene, diterpene, steroid, polyketide, or alkaloid. (10 pts)

$$H_3C$$
 H_3C
 H_3C