Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_\_\_\_\_

**Transcription Practice—10 points**

1. In the DNA sequence below, there is a gene located in the top strand that needs to be expressed. Using the top strand as a template, write the messenger RNA sequence. (1 pt)  
   A T G G G C T A T C T G A T C G C G A C T  
   T A C C C G A T A G A C T A G C G C T G A
2. In the messenger RNA you just synthesized, there are two introns that need to be spliced out. From the left-hand side of the messenger RNA, bases 4-6 and bases 13-18 are introns. Remove them from the messenger RNA and rewrite the final mRNA below. Add a GTP cap and a poly-A tail to the mRNA. (2 pts)
3. Why are retroviruses unique? (2 pts)
4. Why is the enzyme reverse transcriptase vital for the propagation (i.e., reproduction) of retroviruses? (2 pts)
5. Given what you know about retroviruses, what is one reason why it is so difficult for researchers to find an effective treatment for retroviral infections like HIV? (3 pts)