25 points for each question; 100 points total.

1. (a) Draw the chemical structure of acetylated lysine. Discuss how H3K56 acetylation may affect chromatin accessibility.
   (b) Describe how methylation of the same lysine residue may affect chromatin accessibility differently than acetylation.

2. Draw the structure of citrullinated arginine. Discuss the effect of citrullination of histones.

3. Discuss the Speed-Stability paradox in the target recognition of DNA-binding proteins in terms of the two landscapes (Encounter and Binding).

4. Discuss how the binding landscapes of RNAP or nucleosome on DNA can be characterized experimentally. Discuss the similarities and differences in the cases between RNAP and nucleosome.