本試題是否可以使用計算機： □可使用 ， ☑不可使用 （請命題老師勾選）

1. Which of the following tripeptides would be most likely to be soluble in an organic (hydrophobic) solvent like benzene? Explain your answer. (10%)

   A: Phenylalanine-alanine-glycine

   B: Leucine-alanine-lysine

   C: Proline-phenylalanine-leucine

   D: Arginine-lysine-proline

   E: Glutamate-aspartate-glycine

2. Two DNA samples (X and Y) were isolated from two different species. Both DNA samples are found to be the same size. The G+C/A+T ratio of X-DNA sample and Y-DNA sample is 2.0 and 2.5 respectively. Which sample contains smaller number of H bonds between strands? Which DNA sample would be easier to denature? (10%)

3. What is a cellulose? Mammals lack the enzyme that hydrolyzes cellulose. Yet many mammals eat plant material for nutrition. How can they digest the food they are eating? (10%)

4. What is a heat shock protein? Why would heat shock proteins be present at low levels in cells or organisms raised at normal temperatures and then increase in number after a brief exposure to elevated temperatures? (10%)

5. What do DNA Polymerases and RNA Polymerases do? (10%)

6.　What is the difference between hnRNAs, snRNAs, miRNAs, and siRNA? (10%)

7.　Compare the following: (30%)

　　A.　Protein secondary structure vs. tertiary structure

　　B.　Fat vs. oil

　　C.　Native proteins vs. denatured proteins

　　D.　DNA vs. RNA

　　E.　Glycogen vs. starch

　　F.　Competitive vs. noncompetitive inhibition

8.　You are seeking an ideal marker for early diagnosis of oral cancer. Please design an experimental approach for this purpose and how to confirm it will be work in your laboratory? (10%)