

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

回答下列問題，所有考題務必在答案卷上作答。

1. Briefly describe the following terms. (30%)
 - a. Peptide mass fingerprinting
 - b. Heterochromatin
 - c. Matrix metalloproteinases
 - d. Reporter gene
 - e. Amino acid act as a buffer
 - f. Reading frame

2. Describe and compare the following terms: (42%)
 - a. Fat vs. oil
 - b. Glycogen vs. starch
 - c. Transcriptome vs. Functional genomics
 - d. Glycoproteins vs. Proteoglycans
 - e. Small interfering RNAs (siRNAs) vs. MicroRNAs (miRNAs)
 - f. DNA polymerase vs. RNA polymerase
 - g. DNA microarray vs. Protein microarray

3. Two polypeptides, A and B, have similar tertiary structures, but A normally exists as a monomer, whereas B exists as a tetramer, B₄. What differences might be expected in the amino acid composition of A versus B? (10%)

4. Describe three techniques can be used to detect the expression level of genes in cells and tissues. Compare their sensitivity and resolution. (18%)