

※ 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。

1. Please briefly describe the following terms.

- (1) Frameshift (5%)
- (2) Exosome (5%)
- (3) iPS cells (5%)
- (4) SNP (5%)
- (5) Epigenetic modification (5%)
- (6) Precision medicine (5%)

2. Please briefly describe the following methods.

- (1) CRISPR (5%)
- (2) Two dimensional gel electrophoresis (5%)
- (3) Whole genome sequencing (5%)
- (4) Super resolution microscopy (5%)
- (5) Fluorescence resonance energy transfer (FRET) (5%)
- (6) *in situ* hybridization (5%)

3. Please define and describe the regulatory mechanisms of the following terms, microRNA, RNAi, shRNA and lncRNA. (10%)

4. What is autophagy? (5%)

What are the differences between autophagy and ubiquitin-proteasome system (UPS)? (5%)

5. What is cell therapy? (5%)

Please give an example of it's potential application and limitation in human diseases. (5%)

6. What is translational medicine? (5%)

Please describe it's importance and application in medicine. (5%)