

※ 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. Define epigenetic inheritance and provide 3 SPECIFIC examples of it.(25%)
2. There are many ways the protein level/activity could be regulated in a eukaryotic cell. Please provide AT LEAST 5 mechanisms(The more examples the better)(25%)
3. Please briefly describe the following terms.
 - (1) CRISPR (3%)
 - (2) iPS cells (3%)
 - (3) *ex vivo* gene therapy (3%)
 - (4) Optogenetics (3%)
 - (5) microRNA (3%)
4. Please briefly describe the following methods.
 - (1) Super resolution microscopy (3%)
 - (2) Next generation sequencing (3%)
 - (3) FISH (fluorescent *in situ* hybridization) (3%)
 - (4) Microarray (3%)
 - (5) Knockout mice (3%)
5. What is autophagy? (5%)
What are the differences between autophagy and ubiquitin-proteasome system (UPS)? (5%)
6. What is the major finding of the Nobel Prize in Physiology or Medicine 2015? (5%)
2008 Nobel Prize in Chemistry was awarded to Drs. Roger Tsien, Osamu Shimomura and Marty Chalfie, please provide an example in basic or clinic medicine by using their finding. (5%)