※ 考生請注意：本試題 □可 ☑不可 使用計算機

1. "Translational Medicine", or "Translational Research", is growing in importance in the healthcare and biomedical research. Describe what you know about Translational Research. Design a research to study Translational Medicine. (10%)

2. All cells/tissues are exposed to harsh conditions. Even normal developmental or nutritional changes exert stresses as systems try to re-establish homeostasis. Describe the following stress and discuss what actions cells/tissues may respond to protect against this stress.
   (1) Hypoxia (8%)
   (2) ER stress (8%)
   (3) Autophagy (8%)
   (4) Oxidative stress (8%)
   (5) Inflammasome (8%)

3. Please briefly describe how transcription is regulated in mammalian cell (10%).

4. Please give an example of RTK (receptor tyrosine kinase) mediated signaling pathway and its role in regulating physiological function. (15%)

5. Please give an example of GPCR (G protein coupled receptor) mediated signaling pathway and how the deregulation may lead to human disease.(15%)

6. What is the definition of a kinase? Please give an example of how aserine/threonine kinase responses to stimuli by phosphorylation. (10%)