

## 十題簡答 每題十分

1. Please define the following terms
  - a. mRNA
  - b. ribonuclease
  - c. ribosome
  - d. ribozyme
  - e. ribonucleotide
2. How many different temperatures do we need to perform a PCR (polymerase chain reaction)? Please describe them respectively.
3. What kind of process can lead to formation of polytene chromosomes?
4. What are the downstream effects after intracellular inositol trisphosphate (IP3) is elevated?
5. Please compare the differences between conventional PCR and real-time PCR.
6. What are the common lesions found in DNA after exposure to ultraviolet light.
7. In prokaryotes, environmental sensing frequently involves regulatory proteins (two-component systems) that sense and respond to changes in surroundings. Please describe two-component systems briefly.
8. What are the major function(s) of heat shock proteins?
9. According to what kinds of characteristics, two-dimensional (2-D) gel electrophoresis performed under denaturing conditions can be used to separate proteins.
10. Please describe the "check points" in the process of DNA replication.