※ 請於答案卷上依序作答，並標明題號。

一、 **Answer the following questions:**

1. What parts of a polypeptide contribute to the formation of its primary, secondary and tertiary structures? (10 分)
2. List three or four organelles directly involved in the contraction of a muscle cell and explain their contributions. (10 分)
3. Eight centromeres are observed in a prophase I cell from an animal. (a) How many pairs of chromosomes does this animal contain? (b) What is the number of centromeres you expect to find for anaphase I and prophase II, respectively? (c) What is the number of copies of chromosomes attached to each centromere for anaphase I and prophase II, respectively? (10 分)
4. What effect would an absence of O_2 have on the process of oxidative phosphorylation in the mitochondrion? In the absence of O_2, what would happen if you decreased the pH of the intermembrane space of the mitochondrion? Explain your answer. (8 分)
5. What is a gene? How can human cells make more different proteins than the number of genes that we have? (8 分)
6. What is the basis of immunological memory? Why doesn't a flu (vaccine) shot one year give us immunity to flu in subsequent years? (8 分)
7. Is the following statement accurate? " Antibiotics have created drug resistance in methicillin-resistant *Staphylococcus aureus*." Explain your answer. (6 分)

二、 **Explain the following terms (每題 4 分)**

1. ligand-gated ion channel
2. RNA interference
3. biodiversity hot spot
4. carrying capacity
5. renin-angiotensin- aldosterone system
6. secondary succession
7. gastrin
8. excitatory postsynaptic potential
9. lateral line system (in fishes and amphibians)
10. epigenetic inheritance

試題隨卷繳回