Please answer the following questions in either Chinese or English. Draw pictures to illustrate you points if necessary. The use of calculator is NOT allowed in this exam.
(請用中文或英文作答，本考試禁止使用計算機)

1. Define the following terms and give examples.
   (A) Carbon cycle (5%)
   (B) Gene flow (5%)
   (C) Autophagy (5%)

2. Describe the Hardy-Weinberg theorem. Your answers must include its (A) definition, (B) assumptions, (C) potential examples, and a brief discussion. (10%)

3. Describe the organelles in an eukaryotic cell. (10%)

4. Describe the circulation systems of the fetal and adult human. (10%)

5. Describe the properties of the skeletal muscle in mammals. Your answers must include its (A) structures, (B) filamentous components, and (C) contraction cycle. (10%)

6. Describe the microscopic structures of the nervous system in mammals. Your answers must include (A) the types of neurons, (B) the types of glial cells, (C) the connections of neuronal cells, and (D) structures related to neural transmission. (10%)

7. Describe the pancreas of the human. Your answers must include the structures and function of the (A) exocrine pancreas and (B) endocrine pancreas. (10%)

8. Describe the transport and exchange of respiratory gases in the blood of mammals. Your answers must include (A) the relationship between oxygen and hemoglobin and (B) the release of carbon dioxide. (10%)

Please turn over (請翻頁繼續作答)

9. Please read the article below and answer the questions that follow.

Giant pandas (*Ailuropoda melanoleuca*) voraciously consume bamboo and little else. But they are also fussy about where they live. Scientists have found that pandas prefer to roam in old-growth, or natural, forests—those that have never been logged or disturbed—a discovery they hope will influence conservation policies for the endangered animal and help ensure the survival of this iconic species.

To better understand the panda's preferences for habitats, Ecologist analyzed the numbers of pandas in different habitats, examining the influence of forest type and age, tree diameter, bamboo availability, and numerous other variables. Not surprisingly, bamboo availability was the number one factor governing where pandas are found.

But the researchers also discovered that, given comparable bamboo availability, pandas vastly prefer undisturbed forests over immature forests that are regrowing after logging and other habitats, such as those that are dominated by shrubs. These findings suggest that old-growth forests have more easily foraged bamboo and provide the nooks and crannies pandas use as maternal dens.

In addition to natural forest protection, conservationists suggest that more efforts should go into protecting isolated panda groups and linking populations through protected corridors that would allow mating to avoid deleterious inbreeding.

(A) What is the core message of this article? (6%)

(B) Explain the last paragraph in your own words. (6%)

(C) The giant panda is not a cat. They are not classed as bears by some scientists either. However, people in Taiwan and mainland China name giant pandas in a way opposite to each other. Which Chinese name do you think is correct for giant pandas? Why? (3%)