

# 國立嘉義大學 96 學年度 農學研究所博士班招生考試試題

科目：農學專業英文

請將下列各篇英文翻譯成中文

## I. (25%)

Post-slaughter ATP is depleted and proteolysis of the sarcoplasm and sarcolemma reduces their relative impermeability to water. Pre-rigor sodium will progressively stop being pumped out of the cell and calcium back into the sarcoplasmic reticulum as the level of ATP decreases. At rigor the amount of free calcium and magnesium increases up to three times higher than resting cell levels due to disruption of ion flux mechanisms in the muscle cell. Post-slaughter the ions released from the sarcoplasmic reticulum and ions able to diffuse across the sarcolemma can contribute to the degree of swelling or shrinking of the myofibrillar lattice. Hence, the space available to hold water and the distribution of ions in different compartments in the muscle are changed post-slaughter. The breakdown of the costameres, the cytoskeleton and the proteins localised in the Z-disks has been implicated in reducing the force that causes water flow in to the extracellular space causing drip loss from muscle.

## II. (25%)

1. Fast-growing cities, with their dependence on huge external sources of energy, food, water, and life support (natural capital) are especially likely to boom and bust in varying degrees, depending on input factors and the degree to which citizens and governments can anticipate future conditions.
2. Thus, in the early stages of urban growth, when economic conditions are favorable (space and resources available and inexpensive) and when the need for services (water, sewage treatment, often providing the major increase), as in a J-shaped growth pattern.
3. Not until some time later (the time lag) do housing and schools become overcrowded, demands for services increase, taxes rise to cover increased maintenance costs, and general diseconomies of scale begin to be felt.

4. In the absence of early negative feedback, such as rational land-use planning, cities will grow too rapidly for their survival and then suffer decline.
5. Thus, there exists a need to couple an economic carrying capacity with an ecological carrying capacity concept in order to guide sustained development.

### **III. (25%)**

The diversity and viability of fish and wildlife populations and communities, the purity or quality of water and air, and the productivity and quality of soils, are all key indicators of the health and sustainability of forest, rangeland and aquatic ecosystems. These attributes also serve as important indicators of the effects of management and other human activities on ecosystems and their component processes and species. Research and development in this area enhances understanding of organisms, populations, ecosystems, and ecological processes, and provides results and knowledge that are essential to the ability to manage forests and rangelands to sustain air, water and soil quality and biological diversity. Information provided by this research is crucial to the agency's capabilities to comply with requirements of key environmental statutes.

### **IV. (25%)**

The beginning of the 20<sup>th</sup> century saw the rediscovery of Gregor Mendel's work on the inheritance of phenotypic traits in plants. Mendel's work laid the foundations of modern, scientific plant breeding by enabling plant breeders to predict how traits brought into breeding lines would be inherited, and what had to be done to ensure that the lines would breed true. As a result, scientific plant breeding from the early part of the 20<sup>th</sup> century onwards brought huge increases in crop yield, without which current human population levels would already be unsustainable.

Production of genetically modified (GM) crops is, of course, one of the most controversial issues of our time, and the two aspects of GM crops that have worried the public the most are the adventitious synthesis of antigens and the risk of gene flow between GM and non-GM crops and wild relatives. Therefore, governments, particularly in Europe, have responded to public concern over these issues by introducing raft of regulations to control GM crop production and use.