

國立成功大學  
110學年度碩士班招生考試試題

編 號：59

系 所：生命科學系

科 目：生態學

日 期：0203

節 次：第 3 節

備 註：不可使用計算機

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※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Explain the following ecological terms (20%; 2% each):

- a. Acclimation
- b. Chemosynthetic autotroph
- c. Detritivores
- d. Ecotype
- e. Gonadosomatic index (GSI)
- f. Microclimate
- g. Nekton
- h. Rain shadow effect
- i. Thermocline
- j. Warning coloration

2. Draw a line chart showing the logistic model of population growth over time, and present the equation of the logistic model and explain all the terms/parameters in the equation (10%).

3. Please explain and give examples of the following terms (21%, 3% each)

- (1) guild
- (2) keystone species
- (3) functional trait
- (4) ecological restoration
- (5) ecosystem engineers
- (6) Sues effect
- (7) environmental heterogeneity

4. Satoyama (里山) is a Japanese term that refers to mosaics of habitats such as mountain foothills that have a long history of human activities with elaborate management. They often support local communities by providing a wide variety of ecosystem services including water, foods, fuels, cultural spirit, and also maintain biodiversity. For the benefit of biodiversity and human well-being, "Satoyama Initiative" aims to manage the socio-ecological production landscapes (and seascapes) sustainably. This is a highly relevant issue in Taiwan as the intensity of human activity is increasing in the Satoyama environment and conflicts between humans and wildlife are on the rise. (1) Can you give examples of these conflicts in Taiwan? (4%) (2) To conserve the Satoyama landscape, what kind of concept or principles in landscape ecology can be applied? (10%)

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5. Define (a) **facilitative interactions and coextinction** (2% each); explain (b) why and how species engaged in facilitative interactions may be susceptible to coextinction? (4%); and discuss (c) whether and why this would be a more serious problem for generalists or specialists (4%) (12% in total)
  
6. Animals may face different kinds of stress in their lives, and high blood cortisol levels are often associated with high stress. For highly social mammals living in groups, (a) which ranking of individuals (low, medium, high) is expected to have the highest cortisol level, and why? (6%); among groups, (b) which group size (low, medium, high) is expected on average to have the highest cortisol level, and why? (6%) (12% in total)
  
7. List (a) as many density-dependent (DD) and density-independent (DI) factors as you can (6%); and then (b) discuss whether any of these factors could be both DD and DI, and why? (5%) (11% in total)