

系所組別：生命科學系丙組

考試科目：生態學

考試日期：0212，節次：3

第 1 頁，共 1 頁

※ 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。請詳讀題意，注意每題中可能有多重子題，請依序作答並清楚註明題號。

1. **Term definition** (解釋名詞，合計 20 分，各子題配分如題後標示；答案應明確簡短，勿冗長論述)

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|------------------------------|---------------------------|
| a. Ocean acidification (2) | b. Automimicry (4) |
| c. Thermal neutral zone (4) | d. Fecundity schedule (4) |
| e. Resistance adaptation (4) | f. Bohr effect (2) |

2. **Short-answer question group B** (合計 25 分，各子題配分如題後標示)

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|-----------------------------|--------------------------------------|
| a. edge effect (2) | b. road kill (2) |
| c. citizen science (2) | d. meta-community (2) |
| e. water-use efficiency (2) | f. assimilation efficiency (2) |
| g. reintroduction (2) | h. externality (2) |
| i. nutrient cycling (4) | j. Theory of island biogeography (5) |

Essay questions

3. Species have carried out range shifts in response to changing climates. Corridors may thus particularly important for species to move across fragmented landscape. However, whether corridors facilitate species movement is largely unknown. Please select a species that you are familiar with and design experiments to test whether existence of corridors facilitates species dispersal between habitat patches. Please explain in detail the spatial scale and design of experiment, the replication and the responding variables to measure. (15 分)
4. List (a) any four components that are important for characterizing the population ecology of a species, and (b) discuss the major limitations of this "population approach" in describing/studying a species (12 分)
5. Specify (a) three major types of **interspecific interactions**; discuss (b) how each of them may affect the species composition and dynamics of a "community" individually (with real examples as much as you can); and (c) define "**indirect effect**" and give an example. (16 分)
6. What (a) is an **optimality model** and what is a "**Red Queen Hypothesis**" (RQH)? Is (b) optimality model a good approach to address questions related to RQH, and (c) why? (12 分)