

國立彰化師範大學 98 學年度碩士班招生考試試題

系所：生物學系

組別：甲、乙、丙

科目：普通生物學(二)

☆☆請在答案紙上作答☆☆

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一、將下列各子題繪圖並用約 20 字說明(25 分)

- a. Collenchyma
- b. Pericycle
- c. Tracheid
- d. Carpel
- e. Basidiocarp

二、翻譯題，請將下列短文翻譯成中文：(25 分)

On Thursday 12 February, we celebrated 200 years since Charles Darwin, one of the world's most creative and influential thinkers, was born. Darwin200 is a national program of events honoring his scientific ideas and their impact. Many celebrations are taking place this year. Charles Robert Darwin (12 February 1809 – 19 April 1882) was an English naturalist who realized and presented compelling evidence that all species of life have evolved over time from common ancestors, through the process he called natural selection. The fact that evolution occurs became accepted by the scientific community and much of the general public in his lifetime, while his theory of natural selection came to be widely seen as the primary explanation of the process of evolution in the 1930s, and now forms the basis of modern evolutionary theory. Darwin's scientific discovery provided logical explanation for the diversity of life.

三、請說明並解釋何謂生態足跡 (Ecological Footprint)? (5 分)

四、以下生態學名詞請英翻中(10 分)

- a. Ecosystems _____
- b. Disturbance _____
- c. Life history _____
- d. Sexual selection _____
- e. Predation _____
- f. Learning _____
- g. Foraging _____
- h. Community Ecology _____
- i. Intraspecific competition _____
- j. Canopy _____

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五、單選題(每題 1 分，共 10 分)

_____ **1.Predation and parasitism are similar in that both can be characterized as**

- A. +/+ interactions
- B. +/- interactions
- C. +/0 interactions
- D. _/_ interactions
- E. symbiotic interactions

_____ **2.Which statement follows from the principle of allocation**

- A. the number of organisms an area can support is determined by its energy supply
- B. physiological adjustments to environmental changes can extend the tolerance limits of organisms
- C. the total amount of energy available to an organism is partitioned into such processes as reproduction, obtaining nutrients, and coping with the environment
- D. organisms that use more energy for growth and reproduction are able to survive in a wider range of variable environments
- E. organisms allocate most of their energy for homeostasis

_____ **3.The recent increase in atmospheric CO₂ concentration is mainly a result of an increase in**

- A. primary productivity
- B. the biosphere's biomass
- C. the absorption of infrared radiation escaping from Earth
- D. the burning of fossil fuels and wood
- E. cellular respiration by the exploding human population

_____ **4.Which of the following is a result of biological magnification**

- A. Top level predators may be most harmed by toxic environmental chemicals
- B. DDT has spread throughout every ecosystem and is found in almost every organism
- C. The greenhouse effect will be most significant at the poles
- D. Energy is lost at each trophic level of a food chain
- E. Many nutrients are being removed from agricultural lands and shunted into aquatic ecosystems

_____ **5.Which of these ecosystems has the lowest primary productivity per square meter**

- A. a salt marsh
- B. an open ocean
- C. a coral reef

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- D. a grassland
- E. a tropical rain forest

_____ **6. Species that utilize the same source of nutrition within a food web can best be described as . . .**

- A. being secondary consumers within a complex food web.
- B. occupying the same trophic level.
- C. being autotrophs (producers), heterotrophs (consumers), or omnivores.
- D. providing double links in a food chain.
- E. being homeothermic relative to energy flow.

_____ **7. A population of strictly monogamous swans consists of 40 males and 10 females. The effective population size for this population is**

- A. 50
- B. 40
- C. 32
- D. 20
- E. 10

_____ **8. Islands are especially vulnerable to human-caused extinctions because . . .**

- A. islands typically have many endemic species.
- B. islands contain fewer species than mainland areas.
- C. islands are subject to hurricanes and typhoons
- D. many islands have been submerged due to global warming from the greenhouse effect.
- E. All of the above.

_____ **9. Species that have a disproportionately large impact on the maintenance of an ecosystem's biodiversity are referred to as _____.**

- A. primary producer
- B. keystone species
- C. archaea
- D. diversifiers
- E. exotics

_____ **10. Which has the greatest diversity of species?**

- A. Tundra
- B. Tropical rain forest
- C. Taiga
- D. Desert
- E. Temperate forest

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六、名詞解釋(簡潔地說明以下專有名詞，每題 2 分)

- 1.Pacemaker cell
- 2.Chemotaxis
- 3.Obligatory water loss
- 4.Respiratory acidosis
- 5.Secondary active transport
- 6.Wolffian duct
- 7.Alveolar dead space
- 8.Human chorionic gonadotropin
- 9.Neuromuscular junction
- 10.Mean arterial pressure

七、簡答題(5 分)

何謂內源性日夜週期 (endogenous circadian rhythm)? 環境訊息如何調節引導哺乳類動物之內源性日夜週期?