

※ 注意：請於試卷內之「非選擇題作答區」依序作答，並應註明作答之部份及題號。

選擇題，請選出唯一正確答案(每題 2 分)

- 1). Huge cells of circulating water within the oceans distribute heat energy over the globe. These cells are referred to as (A) Hadley Cells. (B) Ferrel Cells. (C) Polar Cells. (D) Gyres.
- 2). Which of the following is probably not an adaptation of hot, desert plants to maintain thermal balance? (A) Growth form high off the ground. (B) CAM photosynthetic pathway. (C) Large, bare leaves. (D) Upper leaves oriented parallel to sun rays
- 3). Which of the following is not an assumption of the Hardy-Weinberg Principle? (A) Large population size. (B) Random mating of individuals within the population. (C) Immigration of new individuals from the outside. (D) All individuals have an equal chance of survival and reproduction.
- 4). Optimal foraging theory predicts that (A) Predators should always take the most abundant prey size because those are the easiest to find. (B) Predators should always take the prey of largest size because they provide the largest nutrient source per kill. (C) Predators should always take the smallest prey because they are the least likely to cause injury. (D) Predators should select prey that maximizes energy intake while minimizing energy costs.
- 5). Species whose population numbers are resilient to disturbance would normally have all the listed characteristics except (A) Long life span. (B) Small body size. (C) High reproductive rate. (D) All the above would be characteristics of a resilient species.
- 6). Which of the following is true regarding r-selected species? (A) Tend to be larger organisms. (B) Tend to mature late and produce few offspring. (C) Tend to be strong competitors. (D) Tend to display a high per capita rate of increase.
- 7). Which of the following equations is used to model population changes under limited resources? (A) $N_t = N_0 \lambda^t$. (B) $dN/dt = rN(1-N/K)$. (C) $N_t = N_0 e^{rt}$. (D) None of the above.
- 8). Which of the following best describes the relationship between mass-specific metabolic rates and body size in endothermic animals? (A) Positive, linear. (B) Negative, linear. (C) Positive, exponential. (D) Negative, exponential.
- 9). A biologist monitors a small area of a sea cliff. Two filter-feeders are present. Over time, one of them, a colonial bryzoan, completely overgrows a barnacle. This interaction is an example of (A) Predation. (B) An indirect interaction. (C) A competitive interaction. (D) Resource partitioning.
- 10). A nektonic invertebrate could be a (A) Tuna. (B) Copepod. (C) Squid. (D) Diatom.

名詞解釋，請以簡單句子說明以下生態名詞的意義(每題 4 分)

1. Biological magnification. 2. Commensalism. 3. Decomposer. 4. Ecological succession.
5. Eutrophication. 6. Founder effect. 7. Genetic bottleneck. 8. Hypoxia. 9. Invasive species.
10. Marine snow. 11. Trophic cascade. 12. Pacific decadal oscillation. 13. Alternate stable state. 14. Microbial loop. 15. Meiofaunal organisms.

申論題(每題 10 分)

1. 許多國家已經禁令捕捉鯊魚，請闡述商業捕鯊可能對海洋生態系統的影響。
2. 臺灣西部近海正在興建數百座海上風力發電機，但是當地漁民認為漁業權利受損，要求補償，請設計一套科學性的方法，用於估算合理的補償機制(金額)。

試題隨卷繳回