

國立中山大學 109 學年度 碩士暨碩士專班招生考試試題

科目名稱：科學英文【海保所碩士班】

— 作答注意事項 —

考試時間：100 分鐘

- 考試開始鈴響前不得翻閱試題，並不得書寫、劃記、作答。請先檢查答案卷（卡）之應考證號碼、桌角號碼、應試科目是否正確，如有不同立即請監試人員處理。
- 答案卷限用藍、黑色筆(含鉛筆)書寫、繪圖或標示，可攜帶橡皮擦、無色透明無文字墊板、尺規、修正液（帶）、手錶(未附計算器者)。每人每節限使用一份答案卷，不得另攜帶紙張，請衡酌作答。
- 答案卡請以 2B 鉛筆劃記，不可使用修正液（帶）塗改，未使用 2B 鉛筆、劃記太輕或污損致光學閱讀機無法辨識答案者，其後果由考生自行負擔。
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- 違規者依本校招生考試試場規則及違規處理辦法處理。

國立中山大學 109 學年度碩士暨碩士專班招生考試試題

科目名稱：科學英文【海保所碩士班】

題號：456001

※本科目依簡章規定「不可以」使用計算機(問答申論題)

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英文翻譯成中文 (1 - 4 每題 10 分, 5 - 8 每題 15 分, 共 100 分)

1. Seawater is slightly basic (meaning $\text{pH} > 7$). Ocean acidification involves a shift of the pH towards neutral rather than acidic conditions ($\text{pH} < 7$).
2. In the concept of the ecosystems, the biological and physical components of the environment are a single interactive system.
3. Primary productivity is usually expressed as units of energy per unit area: kilocalories per square meter. However, primary productivity may also be expressed as the mass of dry organic matter: grams per square meter.
4. The primary greenhouse gases in Earth atmosphere are water vapor (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and ozone (O_3).
5. Photosynthesis is a process used by plants, algae and other organisms to convert light energy and carbon dioxide (CO_2) to chemical energy. The initial product is a 3-carbon sugar that can be used as precursor for biosynthesis of fatty acids, starch, amino acids and other molecules.
6. The photic zone of the ocean is the uppermost layer of the ocean in which photosynthesis can occur. Light with long wavelengths is more difficult to penetrate seawater than short wavelengths, therefore blue light is much more abundant than red light in the lower parts of the photic zones.
7. On average, seawater in the open oceans of the world has a salinity of about 3.5%. This means there are about 35 grams of dissolved salts in one kilogram of seawater, predominately sodium (Na^+) and chloride (Cl^-) ions.
8. Tides are the rise and fall of sea levels caused by the combined effects of the gravitational forces exerted by the Moon and the Sun, and the rotation of the Earth. While tides are usually the largest source of short-term sea-level fluctuations, sea levels are also subject to forces such as wind and barometric changes.

國立中山大學 109 學年度 碩士暨碩士專班招生考試試題

科目名稱：普通生物學【海保所碩士班】

— 作答注意事項 —

考試時間：100 分鐘

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科目名稱：普通生物學【海保所碩士班】

題號：456002

※本科目依簡章規定「不可以」使用計算機(混合題)

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A. 單選題(30 分)，每題 2 分。不可於試題紙上作答。

1. The four most common elements in living organisms are (A) C, H, O, N (B) C, H, O, Na (C) C, H, O, Fe (D) C, N, O, Na.
2. During which stage of meiosis do synapsis and crossing over occur? (A) interphase I (B) prophase I (C) prophase II (D) metaphase I.
3. Which of the following cell structures is associated with the breakdown of harmful substances or substances that are no longer needed by the cell? (A) chloroplasts (B) mitochondria (C) peroxisomes (D) centrioles.
4. Which of the following examples is classified as a metabolic pathway? (A) passive diffusion (B) osmosis (C) cell lysis (D) protein synthesis.
5. If you consume 1 g of each of the following, which will yield the most ATP? (A) glucose (B) fat (C) protein (D) starch.
6. Photophosphorylation during photosynthesis differs from oxidative phosphorylation during cellular respiration in that (A) it involves an electron transport chain (B) energy is stored in the form of a proton concentration difference (C) regeneration of ATP is driven by a flow of protons through an ATP synthase (D) the final electron acceptor is NADP⁺ and not oxygen.
7. Which of the following options best depicts the flow of information when a gene directs the synthesis of a cellular component? (A) RNA → DNA → RNA → protein (B) DNA → RNA → protein (C) protein → RNA → DNA (D) DNA → tRNA → mRNA → protein.
8. Which of the following types of reproductive barriers separates a pair of species that could interbreed except that one mates at dusk and the other at dawn? (A) temporal isolation (B) habitat isolation (C) behavioral isolation (D) mechanical isolation.
9. Life is organized in a hierarchical fashion. Which of the following sequences correctly lists that hierarchy from least inclusive to most inclusive? (A) ecosystem, population, organ system, cell, community, molecule, organ, organism, organelle, tissue (B) cell, molecule, organ system, organ, organelle, population, tissue, organism, ecosystem, community (C) organism, organ system, tissue, population, organ, organelle, community, cell, ecosystem, molecule (D) molecule, organelle, cell, tissue, organ, organ system, organism, population, community, ecosystem.
10. Which of the following organisms first introduced oxygen into Earth's atmosphere? (A) cyanobacteria (B) early protozoans (C) plants (D) green algae.
11. The structural and functional unit of nervous tissue is the (A) dendrite (B) axon (C) neuron (D) nerve.
12. The overall process that refines the filtrate and ultimately returns water and valuable solutes to the blood is known as (A) purification (B) excretion (C) collection (D) reabsorption.
13. The male organ of a flower is the (A) style (B) stamen (C) sepal (D) carpel.
14. Species found in only one place on Earth are called _____ species (A) hot spot (B) exotic (C) keystone (D) endemic.

試題請隨卷繳回，請留意背面是否有題

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共 2 頁第 2 頁

15. Absorption of water is a major function of the (A) colon (B) esophagus (C) rectum (D) appendix.

B. 問答題(70 分)。不可於試題紙上作答。

1. Distinguish between a population and a community. (10 分)

2. What is the Bohr effect, and why is it important? (15 分)

3. List five fishes and their diets. (15 分)

4. What are the major processes that contribute to human influences on the loss of biodiversity? (15 分)

5. Compare the abiotic characteristics of terrestrial and marine environments? (15 分)