

國立中山大學 104 學年度碩士暨碩士專班招生考試試題

科目名稱：生態學【生科系碩士班甲組】

題號：421002

※本科目依簡章規定「不可以」使用計算機(混合題)

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一、選擇題 (單選，共 30 分，每題 2 分)

1. Species that feed on more than one trophic level are called
 - A. tertiary consumers.
 - B. herbivores.
 - C. omnivores.
 - D. primary producers.
 - E. secondary consumers.
2. The Shannon index measures
 - A. interaction strength.
 - B. species richness.
 - C. species diversity.
 - D. the extent of trophic facilitation.
 - E. the size of a trophic cascade.
3. A group of interacting species that occur together at the same place and time is known as a(n)
 - A. community.
 - B. biome.
 - C. species network.
 - D. ecosystem.
 - E. interaction web.
4. Which of the following types of succession involves colonization of habitats devoid of life?
 - A. Primary
 - B. Secondary
 - C. Pristine
 - D. Facilitation
 - E. Abiotic
5. The final theoretical stage of succession is called the _____ stage.
 - A. omega
 - B. Ultimate
 - C. penultimate
 - D. climax
 - E. pioneer
6. Which of the following effects occurs during the alder stage of succession of Glacier Bay communities?
 - A. Increase in nitrogen levels
 - B. Increase in germination rates
 - C. Decrease in root competition
 - D. Increase in light competition
 - E. Decrease in growth rate
7. Which of the following processes or events is most responsible for current species losses in the Amazon?
 - A. Global climate change
 - B. Deforestation
 - C. Acid rain
 - D. Overexploitation
 - E. Invasive species
8. The scientist who conceptualized the Earth as divided into six biogeographic regions and is considered the father of biogeography is
 - A. Alexander von Humboldt.
 - B. Charles Darwin.
 - C. Robert MacArthur.
 - D. Edward O. Wilson.
 - E. Alfred Russel Wallace.
9. Currently in the United States, the major crop used to produce ethanol for fuel is
 - A. sugarcane.
 - B. corn.
 - C. soybeans.
 - D. peanuts.
 - E. alfalfa.

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10. The fate of algae of the genus *Caulerpa* in the Mediterranean best illustrates which of the following?
- A. Salinity can be an important abiotic condition preventing establishment.
 - B. pH can be an important abiotic condition preventing establishment.
 - C. Temperature can be an important abiotic condition preventing establishment.
 - D. Physiological constraints are not always a reliable mechanism for excluding potential invaders from a community.
 - E. Species interactions can be very important factors limiting establishment in a community.
11. Robert MacArthur showed that different species of warblers in New England forests
- A. cannot coexist indefinitely.
 - B. coexist because they utilize different types of trees.
 - C. coexist because they utilize different parts of the same trees.
 - D. coexist because they utilize the same trees at different times of the day.
 - E. coexist despite utilizing the exact same resources.
12. In Sousa's test of the intermediate disturbance hypothesis in intertidal communities, communities with high levels of disturbance were those
- A. in which the experimenter changed the temperature frequently.
 - B. in which the experimenter changed light levels frequently.
 - C. on large boulders.
 - D. on small boulders.
 - E. in which predators were most abundant.
13. In the studies by Hacker and Gaines in a New England salt marsh, the presence of *Juncus* _____ species diversity, especially in the _____ intertidal zone.
- A. increased; high
 - B. decreased; low
 - C. decreased; high
 - D. decreased; middle
 - E. increased; middle
14. The total amount of photosynthesis is referred to as
- A. net primary production (NPP).
 - B. carbon fixation production (CFP).
 - C. net photosynthetic production (NPP).
 - D. gross photosynthetic production (GPP).
 - E. gross primary production (GPP).
15. In which of the following biomes would you most likely see the greatest percentage of NPP devoted to roots?
- A. Pine savannas of Belize
 - B. Tundra of Alaska
 - C. Boreal forests of Russia
 - D. Tropical forest of Panama
 - E. Temperate forests of North America

二、簡答題(共 70 分，每題 7 分)

1. What is the formal definition of a community? Why is incorporating species interactions important to the definition? What kinds of characteristics of communities can be used as a guide to define a community in practical terms?
2. Describe the differences between primary and secondary succession and what they mean for colonizing species.
3. Describe the factors believed to have created biogeographic regions on land and in the oceans.

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4. Describe the interaction between figs and their pollinated wasps.
5. Compare and contrast the predators and parasites.
6. Describe the three generalized types of survivorship curves.
7. How to estimate population abundances and distributions?
8. What is ecological footprint? How to calculate it for a nation?
9. How ecological preferences of C_4 and C_3 plants differ?
10. Describe the vegetation zones along the altitude in Taiwan.