國立臺灣大學97學年度碩士班招生考試試題

一、 單選題(每題 2 分* 10 題= 20 分) ※ 注意：請於試卷上「選擇題作答區」依序作答。

1. Which of the following levels of organization is arranged in the correct sequence from most to least inclusive
   A. community, ecosystem, individual, population
   B. ecosystem, community, population, individual
   C. population, ecosystem, individual, community
   D. individual, population, community, ecosystem
   E. individual, community, population, ecosystem

2. Probably the most important factor(s) affecting the distribution of biomes is (are)
   A. wind and water current B. species diversity C. community structure
   D. climate E. day length and rainfall

3. Plants use approximately ____ percent of the incident light for biosynthesis.
   A. 0.1 to 0.5 B. 1 to 3 C. 10 to 20 D. 40 to 50 E. 100

4. Plants of the desert biomes:
   A. carry out only C_3 photosynthesis.
   B. usually are perennial rather than annual.
   C. usually have leaves that lack chlorophyll.
   D. have low maximum photosynthetic rates.
   E. have wide-ranging roots unless growing in washes.

5. A fungus is both a(n) _____ and a _____
   A. heterotroph; primary producer B. autotroph; primary consumer
   C. heterotroph; seconday consumer D. heterotroph; decomposer
   E. autotroph; decomposer

6. In the logistic equation dN/dt = rN * (K-N)/K, r is a measure of the population's intrinsic rate of increase. It is determined by which of the following?
   A. birth rate B. death rate C. density
   D. a and b only E. a, b, and c

7. 10,000 kcal of producer would support approximately __ kcal of tertiary consumer.
   A. 1 B. 0 C. 1000 D. 10 E. 100

8. The solute, matric and pressure potentials of a plant cell are -0.8, -0.1 and 0.3 MPa. Then, the water potential of this cell is about
   A. -0.6 MPa B. -0.4 MPa C. 0.2 MPa
   D. 0.024MPa E. -1.2 MPa

見背面

9. Which of the following aspects of an organism's life is least relevant to its life history?
   A. number of offspring per reproductive event
   B. age at which it first reproduce
   C. frequency of reproduction
   D. frequency of dispersal
   E. all of the above

10. To measure the population size of monarch butterflies occupying a particular park, 100 butterflies are captured, marked with a small dot on a wing, and then release. The next day, another 100 butterflies are captured, including the recapture of 20 marked butterflies. One would estimate the population to be
   A. 200　　B. 500　　C. 1000　　D. 2000　　E. 10000

二. 請寫出下列英文名詞，寫中文不予計分(每題 3 分* 10 題 =30 分)
※注意：請於試卷「非選擇題作答區」依序作答，並應註明作答之大題及其題號。

1. _____ is defined as the warming of the earth's atmosphere and surface as a result of heat trapped in near the earth's surface by gases in the atmosphere, especially water vapor, carbon dioxide, methane, ozone, nitrous oxide, and chlorofluorocarbons.
2. _____are species that, despite low biomass, exert strong effects on the structure of the communities they inhabit.
3. _____ is the process that the gradual change in plant and animal communities in an area following disturbance or the creation of new substrate.
4. _____ is the breakdown of organic matter accompanied by the release of carbon dioxide and other inorganic compounds; is a key process in nutrient cycling.
5. _____ is an evolutionary process that changes anatomy, physiology, or behavior, resulting in an increased ability of a population to live in a particular environment.
6. _____ is a table of age-specific survival and death, or mortality, rates in a population.
7. _____ is proposed by Charles Darwin as the primary mechanism driving evolution.
8. _____ is the maximum population of a species that a particular ecosystem can sustain.
9. A species' _____ consists of all the factors necessary of its existence -- approximately when, where, and how a species makes its living.
10. _____ is the interaction between individuals of different species that benefit both partners.

接次頁

三、配合題: 請就生態學主要的研究範疇(a~h)選擇一個最符合下列子題內容的歸屬（每題2分）
※注意：請於試卷「非選擇題作答區」依序作答，並應註明作答之大題及其題號。

a) Physiological Ecology
b) Population Ecology
c) Community Ecology
d) Ecosystem Ecology
e) Landscape Ecology
f) Behavioral Ecology
g) Evolutionary Ecology
h) Conservation Ecology

(　) **1. Restoration**
(　) **2. Balanced polymorphism**
(　) **3. Homeostasis**
(　) **4. Logistic growth equation**
(　) **5. Key-factor analysis**
(　) **6. Flux of energy**
(　) **7. Habitat fragmentation**
(　) **8. Optimal foraging theory**
(　) **9. Intermediate-disturbance hypothesis**
(　) **10. Guild**

四、問答題 ：

1. 族群生態與群聚生態探討之重點各為何？（15 分）

2. 請就某虛擬的生態保護區(森林、海洋、湖泊或針對某特殊稀有物種)提出一份基礎研究規劃書（15 分）。

試題隨卷繳回