國立臺灣大學99學年度碩士班招生考試試題

* 請按順序作答且將答案填寫於答案卷上。

一、 單選題(每題 2 分* 16 題= 32 分)

1. A biome is characterized primarily by
a) climate and predominate plant types.
b) temperature and moisture.
c) flora and fauna.
d) global weather patterns.
e) none of the above

2. Climatic diagrams provide all of the following information **except**:
a) wind patterns.
b) average minimum temperature above and below 0°C.
c) temperature and precipitation variations.
d) wet and dry season durations.
e) none of the above

3. When an organism becomes acclimated to a new environmental situation; it will generally involve
a) physiological changes.
b) genetic changes.
c) sociological changes.
d) both physiological changes and genetic changes.
e) both genetic changes and sociological changes.

4. In general, a plant located in an arid climate will possess all of the following in order to prevent water loss **except**:
a) waxy coating.
b) decreased root biomass.
c) decreased shoot biomass.
d) increased root length.
e) reduced leaf size.

5. Herbivores, carnivores, and detritivores are all
a) omnivores.
b) autotrophs.
c) animals.
d) browsers.
e) heterotrophs.

6. Fitness is defined as the
a) health of an individual organism.
b) ability of an organism to adapt to new environmental situations.
c) quality of offspring produced.
d) number of genes contributed by an individual to the next generation.
e) all of the above

7. The Hardy–Weinberg principle states that
a) genotypic changes will result in phenotypic changes.
b) phenotypic changes will result in genotypic changes.
c) allelic frequencies within a population will not change unless certain conditions are met.
d) allelic frequencies within a population will change unless certain conditions are met.
e) none of the above

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8. In order to determine whether a species is common or rare, ecologists use all of the following criteria except:
a) habitat tolerance.　b) evolutionary existence.　c) geographical range.
d) local population size.　e) none of the above

9. The age distribution of a population can reveal
a) growth potential.　b) survivorship.　c) reproduction.
d) both growth potential and survivorship.　e) growth potential, survivorship and reproduction.

10. An annual plant when initially colonizing an area will probably demonstrate
a) annual growth rate.　b) geometric population growth.
c) exponential growth rate.　d) logistic growth.
e) none of the above

11. Which of the following is NOT a characteristic favored by K-selection?
a) low intrinsic rate of increase　b) late reproduction
c) many, small offspring　d) repeated bouts of reproduction
e) strong competitive ability

12. Gause's "competitive exclusion principle" states that
a) when two species occur together, competition is always prevented by some behavioral adjustment.
b) no two species can coexist indefinitely.
c) no two competing species can coexist indefinitely.
d) no two species with identical niches can coexist indefinitely.
e) none of the above

13. A keystone species is one
a) that makes up a very large proportion of total community biomass.
b) that feeds on a very large fraction of all available prey species.
c) that is fed on by a very large fraction of all predators in its community.
d) whose feeding activities have a disproportionate effect on the structure of its community.
e) that occupies the lowest level (the base) of the food web.

14. Nitrogen stable isotopes are useful tools for the study of food web structure because isotope ratios
a) change in predictable ways across trophic levels.
b) often vary among alternative food sources for a consumer.
c) for a predator exactly match the isotope ratio in its prey.
d) both (a) and (b)
e) both (b) and (c)

15. The rate of decomposition of leaf litter in woodlands can be strongly influenced by
a) moisture.　b) nitrogen content.　c) leaf toughness.
d) all of the above　e) none of the above

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16. The equilibrium model of island biogeography explains diversity on islands as a balance between
a) speciation and extinction. b) immigration and extinction. c) speciation and emigration.
d) immigration and emigration. e) speciation and immigration.

二. 請寫出下列英文名詞，寫中文不予計分(每題 3 分* 6 題 = 18 分) 。請將答案填寫於答案卷上。

1. In the "Taiwan LTER Network", LTER stands for ____.

2._____ is defined as a process that changes populations of organisms over time, or as a process that changes gene frequencies in a population.

3. ____ are locally adapted and genetically distinctive populations within a species.

4. The total amount of energy fixed by autotrophs in an ecosystem is called _____.

5. ____ is the actual niche of a species whose distribution is restricted by biotic interactions such as competition, predation, disease, and parasitism.

6._____ is the study of the relationships between organisms and the environment.

三、問答題 ：

1. 中華白海豚是瀕臨滅絕的保育類野生動物，在臺灣其族群量可能約 100 隻，目前已知中華白海豚在臺灣西海岸水域的分布，大致以水深 25 m 以內，為主要的棲息地，以空間的角度來看，其分布呈現線型，可用棲息地不多，且面臨到許多的威脅，其中最大的問題來自海域的開發，如彰化海域的國光石化（包含一個人工島）整體開發案。請以生態學的角度，說明中華白海豚族群所面臨的問題？（4 分）若欲進行研究以解決保育上的問題，可以從哪些課題著手？（9 分）目前可以進行哪些保育措施？（4 分）

2. 氣候變遷對於臺灣生態有許多的衝擊，請以生態學的觀點，說明在沿岸濕地（9 分）和高海拔地區（如玉山）（9 分）兩類型的生態系所可能遭受的衝擊。

3. 外來種對於生態有許多的影響，請以臺灣的銀合歡或福壽螺為例子，說明外來種的成因（6 分）和所造成的生態衝擊（9 分）。

試題隨卷繳回