單選題：請於每題所列之四個選項中，選擇最正確或最符合的答案。一題 2.5 分，共 40 題，總分為 100 分。請於答案卷之選擇題作答區依題號順序作答，請勿將答案填寫於試題紙上。

1. Which of the following statements about the niche concept is **incorrect**?
   (A) The Eltonian niche concept emphasizes a species' functional role and biotic interactions (e.g., trophic position).
   (B) The realized niche of a species is typically smaller than its fundamental niche.
   (C) The Hutchinsonian niche describes a niche as a multidimensional hypervolume.
   (D) The Grinnellian niche concept emphasizes phylogenetic relationships among species.

2. Which of the following statements about the River Continuum Concept is **incorrect**?
   (A) From upstream to downstream, FPOM is gradually replaced by increasingly abundant CPOM.
   (B) Many fishes in headwater streams require well-oxygenated water.
   (C) Microbes are significant consumers throughout much of the river continuum.
   (D) Benthic invertebrates can be classified into functional feeding groups (e.g., collectors, grazers/scrapers, shredders) based on how they acquire organic matter.

3. Regarding thermal regulation, which of the following statements is **correct**?
   (A) Plants do not thermoregulate; only animals can regulate body temperature.
   (B) Endotherms do not require thermoregulation because their body temperature is always constant.
   (C) Tropical animal species often have broader thermal neutral zones than arctic animal species.
   (D) Many species can survive extreme conditions by lowering their metabolic rate and entering dormancy.

4. Which is the best example of a density-dependent process?
   (A) A frost event killing seedlings across a landscape.
   (B) A wildfire reducing biomass in a forest.
   (C) Disease transmission increasing as host density increases.
   (D) A volcanic eruption burying a population.

5. The typical ecological efficiency between trophic levels is often approximated as:
   (A) ~90%
   (B) ~50%
   (C) ~10%
   (D) ~1%

6. Which of the below is the definition of Net Primary Productivity (NPP)?
   (A) Gross primary productivity minus respiration by consumers.
   (B) Gross primary productivity plus respiration by plants.
   (C) Respiration by producers minus gross primary productivity.
   (D) Gross primary productivity minus respiration by producers.

7. A keystone predator most often increases community diversity by:
   (A) Preventing competitive dominance by a few species.
   (B) Eliminating all herbivores from the system.
   (C) Increasing net primary production directly.
   (D) Converting producers into consumers.

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8. With the source–sink dynamics concept of metapopulation, a "sink" habitat is best described as which of the below?
(A) Predators are always absent.
(B) Local reproduction exceeds local mortality, exporting individuals.
(C) Population growth rate remains at zero.
(D) Local reproduction is insufficient to balance mortality without immigration.

9. A community with high evenness means:
(A) Many species are present, and one dominates strongly.
(B) Species richness is low.
(C) The number of individuals is relatively close among species.
(D) Only rare species are present.

10. What is the main focus of ecological stoichiometry?
(A) The stochastic spatial distribution of species across landscapes.
(B) The balance of complex energy flow, ignoring nutrients.
(C) The constraints imposed by elemental ratios (e.g., C:N:P) on organisms and interactions.
(D) The genetics of nutrient transporters.

11. A phenological mismatch is most likely when climate change causes:
(A) Predators and prey to evolve identical thermal tolerances.
(B) The timing of interacting species' life-history events shifts at different rates.
(C) All species to shift their ranges poleward at the same speed.
(D) Nutrient cycles stop entirely.

12. Compared with K-selected species, r-selected species typically have what kind of life-history characteristics?
(A) Few offspring, high parental care.
(B) Many offspring, larger population growth potential.
(C) Low dispersal ability and long lifespan.
(D) Stable population sizes close to carrying capacity.

13. A Type-II functional response typically implies that predation rate per predator:
(A) Increases linearly without limit as prey density increases.
(B) Rises quickly at low prey density and then saturates due to handling time.
(C) Declines at high prey density because predators become less efficient.
(D) Is independent of prey density.

14. A Type-II survivorship curve is characterized by:
(A) High juvenile mortality and low adult mortality.
(B) Constant mortality risk across ages.
(C) Low mortality early in life and increased mortality late in life.
(D) Low mortality risk in juveniles and old adults, high risk in mid-age individuals.

15. What is an "ecotone"?
(A) A biome defined solely by latitude.
(B) A transition zone between adjacent ecosystems or communities.
(C) A community with zero species turnover.

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(D) A population at equilibrium.

16. Countercurrent heat exchange is most directly advantageous because it:
(A) Reduces heat loss by transferring heat from warm blood to cooler blood.
(B) Maximizes heat loss to prevent overheating.
(C) Prevents oxygen delivery to tissues at low temperatures.
(D) Eliminates the need for insulation.

17. Bergmann's rule and Allen's rule (in their classic forms) predict that endotherms in colder climates tend to have what kind of characteristics?
(A) Smaller bodies and longer appendages.
(B) Larger bodies and shorter appendages.
(C) Larger bodies and longer appendages.
(D) Smaller bodies and shorter appendages.

18. Which of the below best defines phenotypic plasticity?
(A) Genetic changes in a population across generations due to selection.
(B) Random developmental noise unrelated to the environment.
(C) A single genotype producing different phenotypes under different environmental conditions.
(D) The inability of a trait to change with the environment.

19. Optimal foraging theory predicts that animal foragers should generally:
(A) Prefer the most abundant prey type because it's the most frequently encountered one.
(B) Always specialize in a single prey type regardless of abundance.
(C) Prefer the rarest prey type to minimize competition.
(D) Select diet to maximize energy gained per unit time, subject to constraints (e.g., handling time).

20. A major trade-off associated with stomatal opening in plants is between:
(A) CO_2 uptake for photosynthesis and water loss via transpiration.
(B) Nitrogen fixation and phosphorus uptake.
(C) Root growth and seed dispersal.
(D) Herbivory resistance and pollination.

21. A common consequence of habitat fragmentation (with the same total habitat amount) is often:
(A) Increased gene flow among patches.
(B) Increased edge effects and reduced interior habitat.
(C) Increased interior habitat and reduced edge effects.
(D) No change in species interactions.

22. The two-species Lotka–Volterra competition model predicts stable coexistence when:
(A) Each species limits itself more than it limits the other species.
(B) Both species are more susceptible to competition from the other species.
(C) All interspecific and intraspecific competition is equal in strength.
(D) There is a trade-off such that species with higher r have lower K.

23. The term "Priority effect" in community ecology commonly refers to a situation where:

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(A) Species with higher dispersal always dominate communities.
(B) The first species to arrive can alter the outcome of competition among later arrivals.
(C) Species richness depends on the amount of nutrients added to the system.
(D) Communities converge to the same state regardless of history.

24. In the theory of island biogeography, equilibrium species richness increases with:
(A) Smaller island area and greater isolation.
(B) Larger island area and less isolation.
(C) Greater isolation regardless of island size.
(D) Smaller area regardless of isolation.

25. Which of the following statements of the age-structured Leslie matrix model is **correct**:
(A) The population will eventually reach its carrying capacity.
(B) The first row represents survival probability across ages.
(C) The population will eventually reach a stable age distribution.
(D) Populations will always form a population age pyramid with a wide base.

26. The term "beta diversity" refers to:
(A) Species richness within a single plot.
(B) Differences in species composition among sites.
(C) Total regional species richness.
(D) Evenness of species abundances within a community.

27. The concept of "matrix" in landscape ecology is best described as:
(A) The set of habitat patches used by the focal species.
(B) The non-habitat background land cover surrounding suitable patches.
(C) The boundary between two habitats.
(D) The total number of corridors in a landscape.

28. In the logistic population growth model with positive intrinsic growth rate r and carrying capacity K, which of the following statements is **correct**:
(A) Population growth rate is maximized when the population size equals K.
(B) Maximum sustainable yield (MSY) occurs when population size is near K.
(C) Populations sizes above K will experience negative growth rates.
(D) Population growth rate is r when the population size equals $K/2$.

29. Eutrophication of lakes is most commonly driven by excess:
(A) Sodium and chloride.
(B) Nitrogen and/or phosphorus inputs.
(C) Oxygen input.
(D) Silica input from bedrock weathering.

30. In most terrestrial ecosystems, phosphorus is often tightly cycled because:
(A) It has a large atmospheric pool.
(B) It is produced by nitrification.
(C) It is mainly supplied by weathering and lacks a major gaseous phase.

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(D) It is highly volatile and easily lost to the atmosphere.

31. In the classic Lotka–Volterra predator–prey model, the dynamics typically show:
(A) Convergence to a stable equilibrium.
(B) Exponential growth of both predator and prey.
(C) Alternative stable states depending on predator abundance.
(D) Population cycles whose amplitude depends on initial conditions.

32. Which of the following statements of succession theory is **correct**?
(A) Succession on pastures after abandonment represents an example of primary succession.
(B) Connell and Slatyer (1977) proposed three models for succession: facilitation, competition, and alternation.
(C) Henry Gleason did not support the superorganism view of succession.
(D) The three models of Connell and Slatyer (1977) differ in how late-arriving species impact the early-arriving ones.

33. Functional redundancy in ecological communities implies that:
(A) Every species has a completely unique function.
(B) Species richness always has positive effects on ecosystem function.
(C) Ecosystem function depends only on abiotic conditions.
(D) Multiple species can perform similar ecological roles.

34. Biodiversity–ecosystem functioning experiments often find that higher species richness increases productivity due to:
(A) Sampling effects only, seldom due to niche partitioning.
(B) Both complementarity and selection effects.
(C) Predator exclusion in diverse plots.
(D) Reduced respiration lost in diverse plots.

35. Which of the following mechanisms **cannot** explain the latitudinal gradient of biodiversity?
(A) Tropics experience stronger ecological factors maintaining diversity.
(B) Tropics have higher diversification rates.
(C) Tropics experience more environmental fluctuations.
(D) Tropics had a longer diversification time.

36. Which of the following statements about the trophic cascade is **correct**?
(A) It is a classic example of bottom-up control.
(B) Is a classic example of keystone predation.
(C) Can only be found in terrestrial ecosystems.
(D) Adding predators will release producers from herbivory in a three-trophic-level food chain.

37. Which of the following ecological processes **cannot** promote the stability of mutualistic interactions?
(A) Mutualistic benefits do not increase indefinitely with partner density.
(B) Both players transfer more benefits to the best partner.
(C) Players transfer benefits to partners regardless of their mutualistic return.
(D) Host sanction of cheaters.

38. Which of the following statements of ecological patterns is **incorrect**:
(A) The species abundance distribution is often described by a log-normal distribution.

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(B) The species–area relationship is often described by a power-law function.
(C) A community's rarefaction curve is often a saturating function.
(D) The rank abundance distribution is often described by a normal distribution.

39. A metacommunity is defined as a set of local communities linked together via:
(A) Genetic drift.
(B) Nutrient input.
(C) Evolution.
(D) Species dispersal.

40. Which of the following statements about the intermediate disturbance hypothesis is **correct**:
(A) Species evenness is highest at intermediate levels of disturbance.
(B) Originally proposed by Robert MacArthur.
(C) Low levels of disturbance result in low species richness due to competitive exclusion.
(D) High levels of disturbance result in high species richness due to fluctuating environments that favor different types of species.

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