

UNIT VI: BIO GEOGRAPHY

Set I

1. What is the term for the study of the distribution of species and ecosystems in geographic space and through geological time?

- a) Ecology
- b) Biogeography
- c) Geology
- d) Climatology

Correct Answer: b) Biogeography

2. Which factor primarily determines the distribution of terrestrial biomes on Earth?

- a) Latitude
- b) Elevation
- c) Precipitation
- d) Soil type

Correct Answer: a) Latitude

3. Which of the following is a biotic factor affecting the distribution of species?

- a) Temperature

- b) Soil pH
- c) Predation
- d) Precipitation

Correct Answer: c) Predation

4. The Wallace Line is associated with the division between which two biogeographic regions?

- a) Nearctic and Neotropical
- b) Palearctic and Oriental
- c) Neotropical and Australasian
- d) Neotropical and Afrotropical

Correct Answer: c) Neotropical and Australasian

5. Which type of island is formed due to rising sea levels that submerge a landmass, isolating its biota?

- a) Oceanic island
- b) Continental island
- c) Volcanic island
- d) Barrier island

Correct Answer: b) Continental island

6. Which of the following is not a major factor affecting plant distribution in terrestrial ecosystems?

- a) Soil fertility
- b) Competition
- c) Topography
- d) Atmospheric pressure

Correct Answer: d) Atmospheric pressure

7. Which biome is characterized by low precipitation, extreme temperature variations, and a dominant vegetation of grasses and shrubs?

- a) Desert
- b) Tropical rainforest
- c) Temperate deciduous forest
- d) Taiga

Correct Answer: a) Desert

8. The term "endemism" refers to species that are:

- a) Widely distributed across multiple continents
- b) Restricted to a specific geographic area or region
- c) Currently extinct
- d) Highly migratory

Correct Answer: b) Restricted to a specific geographic area or region

9. Which of the following factors is a major driver of speciation and the formation of new species in isolated populations?

- a) Gene flow
- b) Hybridization
- c) Genetic drift
- d) Geographic isolation

Correct Answer: d) Geographic isolation

10. The concept of "island biogeography" was developed by which ecologists?

- a) Charles Darwin and Alfred Russel Wallace
- b) Robert MacArthur and E.O. Wilson
- c) Ernst Haeckel and Carl Linnaeus
- d) Gregor Mendel and Thomas Malthus

Correct Answer: b) Robert MacArthur and E.O. Wilson

11. Which of the following factors is an abiotic determinant of aquatic ecosystems?

- a) Competition
- b) Temperature

- c) Predation
- d) Mutualism

Correct Answer: b) Temperature

12. In the context of biogeography, what is the term for the gradual change in species composition along an environmental gradient?

- a) Ecotone
- b) Ecological succession
- c) Biodiversity hotspot
- d) Ecological niche

Correct Answer: a) Ecotone

13. Which of the following continents has the highest level of biodiversity?

- a) Africa
- b) Asia
- c) South America
- d) Antarctica

Correct Answer: c) South America

14. Which type of wetland is characterized by having peat as its primary soil component and is often acidic?

- a) Marsh
- b) Swamp
- c) Bog
- d) Floodplain

Correct Answer: c) Bog

15. Which of the following is a primary driver of deforestation in tropical rainforests?

- a) Mining
- b) Agriculture
- c) Urbanization
- d) Air pollution

Correct Answer: b) Agriculture

16. What is the primary factor that limits the growth of coral reefs?

- a) Water temperature
- b) Ocean salinity
- c) Water depth
- d) Predation

Correct Answer: a) Water temperature

17. Which of the following is not a characteristic of temperate grasslands?

- a) Frequent wildfires
- b) Deep, fertile soils
- c) Dominance of woody vegetation
- d) Grazing by herbivores

Correct Answer: c) Dominance of woody vegetation

18. Which biome is characterized by coniferous trees, cold winters, and acidic soils?

- a) Tundra
- b) Desert
- c) Taiga
- d) Savanna

Correct Answer: c) Taiga

19. The study of the long-term changes in the distribution of species and ecosystems in response to climate change is known as:

- a) Paleobiogeography
- b) Historical biogeography
- c) Climate biogeography
- d) Bioclimatology

Correct Answer: b) Historical biogeography

20. Which of the following is an example of a mutualistic relationship between species?

- a) Predation
- b) Parasitism
- c) Commensalism
- d) Mycorrhizal associations

Correct Answer: d) Mycorrhizal associations

21. Which of the following factors plays a significant role in determining the types of vegetation found in aquatic ecosystems?

- a) Soil composition
- b) Water depth
- c) Temperature
- d) Atmospheric pressure

Correct Answer: b) Water depth

22. The concept of "ecological niche" refers to:

- a) The physical space occupied by an organism
- b) The role and position of a species within an ecosystem
- c) The genetic diversity of a species

d) The reproductive strategy of a species

Correct Answer: b) The role and position of a species within an ecosystem

23. Which of the following is a major factor contributing to the loss of biodiversity in marine ecosystems?

- a) Overfishing
- b) Deforestation
- c) Air pollution
- d) Habitat fragmentation

Correct Answer: a) Overfishing

24. Which type of ecological succession occurs in an area where no soil is initially present?

- a) Primary succession
- b) Secondary succession
- c) Climax succession
- d) Pioneer succession

Correct Answer: a) Primary succession

25. The process of two or more species evolving adaptations in response to each other's presence is known as:

- a) Coevolution
- b) Convergent evolution
- c) Divergent evolution
- d) Allopatric speciation

Correct Answer: a) Coevolution

26. Which of the following is an example of a keystone species in an ecosystem?

- a) Deer
- b) Bees
- c) Sea otters
- d) Earthworms

Correct Answer: c) Sea otters

27. Which biome is characterized by low temperatures, high winds, and permafrost?

- a) Desert
- b) Tundra
- c) Savanna
- d) Temperate rainforest

Correct Answer: b) Tundra

28. What is the primary driver of the formation of biomes on Earth?

- a) Volcanic activity
- b) Climate
- c) Soil type
- d) Human activity

Correct Answer: b) Climate

29. Which of the following is not a factor contributing to the formation of desert biomes?

- a) High precipitation
- b) Low humidity
- c) High temperatures
- d) Sparse vegetation

Correct Answer: a) High precipitation

30. Which of the following statements about the distribution of species is true?

- a) Species are evenly distributed across all ecosystems.
- b) Species distribution is primarily determined by abiotic factors.

c) Species distribution is influenced by both abiotic and biotic factors.

d) Biotic factors have no impact on species distribution.

Correct Answer: c) Species distribution is influenced by both abiotic and biotic factors.

31. Which biome is characterized by long, cold winters and short, cool summers, with coniferous forests as the dominant vegetation?

a) Desert

b) Grassland

c) Temperate rainforest

d) Taiga

Correct Answer: d) Taiga

32. The process of evolution occurring in separate, geographically isolated populations is known as:

a) Sympatric speciation

b) Allopatric speciation

c) Hybridization

d) Gene flow

Correct Answer: b) Allopatric speciation

33. Which of the following is a characteristic of a climax community in ecological succession?

- a) Rapid changes in species composition
- b) Low species diversity
- c) Pioneer species dominance
- d) Stability and equilibrium

Correct Answer: d) Stability and equilibrium

34. Which of the following is not a factor influencing the distribution of marine organisms in the ocean?

- a) Ocean currents
- b) Water temperature
- c) Elevation
- d) Salinity

Correct Answer: c) Elevation

35. Which of the following is a primary factor contributing to the formation of deserts near the 30-degree latitude lines (e.g., Sahara Desert)?

- a) High precipitation
- b) Low pressure systems
- c) Proximity to the equator
- d) Orographic rainfall

Correct Answer: b) Low pressure systems

36. The concept of "ecosystem services" refers to:

- a) The ecological role of keystone species
- b) The benefits provided by ecosystems to humans
- c) The study of ecological niches
- d) The genetic diversity within an ecosystem

Correct Answer: b) The benefits provided by ecosystems to humans

37. Which of the following factors can lead to the fragmentation of natural habitats and negatively impact biodiversity?

- a) Habitat restoration
- b) Protected areas
- c) Urbanization
- d) Conservation efforts

Correct Answer: c) Urbanization

38. Which biome is characterized by high precipitation, warm temperatures, and dense vegetation, often with high species diversity?

- a) Desert

- b) Tundra
- c) Tropical rainforest
- d) Temperate grassland

Correct Answer: c) Tropical rainforest

39. The concept of "biogeographic realms" is used to:

- a) Describe the distribution of marine organisms
- b) Divide the Earth into distinct biogeographic regions based on shared species
- c) Explain the formation of volcanic islands
- d) Classify species based on their niche preferences

Correct Answer: b) Divide the Earth into distinct biogeographic regions based on shared species

40. Which of the following is a terrestrial biome characterized by a layer of permanently frozen soil beneath the surface?

- a) Tundra
- b) Desert
- c) Savanna
- d) Chaparral

Correct Answer: a) Tundra

41. Which of the following is an example of a pioneer species in primary succession?

- a) Oak tree
- b) Mosses and lichens
- c) Deer
- d) Wolves

Correct Answer: b) Mosses and lichens

42. The process of one species benefiting while the other is neither harmed nor helped in a relationship is known as:

- a) Predation
- b) Parasitism
- c) Commensalism
- d) Mutualism

Correct Answer: c) Commensalism

43. Which of the following factors can lead to the loss of biodiversity in aquatic ecosystems?

- a) Overfishing
- b) Reforestation
- c) Reduced water pollution
- d) Protected marine reserves

Correct Answer: a) Overfishing

44. Which biome is characterized by hot, dry summers and cool, wet winters, with evergreen shrubs and small trees as the dominant vegetation?

- a) Desert
- b) Grassland
- c) Mediterranean scrubland (Chaparral)
- d) Temperate rainforest

Correct Answer: c) Mediterranean scrubland (Chaparral)

45. The term "biogeographic barrier" refers to:

- a) A type of oceanic island
- b) A physical or ecological feature that limits the movement of species
- c) A migratory route for birds
- d) A region with high species diversity

Correct Answer: b) A physical or ecological feature that limits the movement of species

46. Which of the following is a major factor affecting the distribution of freshwater organisms in rivers and streams?

- a) Ocean currents

- b) Water temperature
- c) Elevation
- d) Soil type

Correct Answer: b) Water temperature

47. Which biome is characterized by a distinct wet season and dry season, with grasses and scattered trees as the dominant vegetation?

- a) Desert
- b) Savanna
- c) Temperate deciduous forest
- d) Taiga

Correct Answer: b) Savanna

48. The process of ecological succession typically leads to an increase in:

- a) Species diversity
- b) Soil erosion
- c) Pioneer species
- d) Climax communities

Correct Answer: a) Species diversity

49. Which of the following is a major factor contributing to coral reef bleaching?

- a) High salinity
- b) Ocean acidification
- c) Overfishing
- d) Low water temperature

Correct Answer: b) Ocean acidification

50. Which of the following is a primary factor contributing to the formation of rain shadows and desertification in certain regions?

- a) High atmospheric pressure
- b) Prevailing winds
- c) Proximity to the equator
- d) Ocean currents

Correct Answer: b) Prevailing winds

Set II

1. Which scientist is credited with proposing the theory of continental drift, which had a profound impact on the field of biogeography?

- a) Charles Darwin
- b) Alfred Wegener
- c) Carl Linnaeus
- d) Gregor Mendel

Correct Answer: b) Alfred Wegener

2. The concept of "vicariance" in biogeography refers to:

- a) The dispersal of species to new areas
- b) The division of a species into subspecies
- c) The separation of a population by geographic barriers
- d) The evolution of convergent traits in unrelated species

Correct Answer: c) The separation of a population by geographic barriers

3. Which biogeographic region is known for its unique flora and fauna, including marsupials such as kangaroos and koalas?

- a) Nearctic
- b) Neotropical

- c) Australasian
- d) Afrotropical

Correct Answer: c) Australasian

4. What type of dispersal occurs when plants release their seeds, and the seeds are carried away from the parent plant by wind?

- a) Endozoochory
- b) Anemochory
- c) Myrmecochory
- d) Hydrochory

Correct Answer: b) Anemochory

5. Which of the following factors is responsible for the formation of the "rain shadow" effect, leading to dry conditions on the leeward side of mountains?

- a) High humidity
- b) Prevailing winds
- c) Ocean currents
- d) Volcanic eruptions

Correct Answer: b) Prevailing winds

6. The term "neoteny" is related to which biogeographic concept?

- a) Adaptive radiation
- b) Ecological niche
- c) Island biogeography
- d) Retention of juvenile traits in adult organisms

Correct Answer: d) Retention of juvenile traits in adult organisms

7. Which type of island is formed by the deposition of sediment at the mouth of a river as it flows into a body of water, leading to the accumulation of organic material and the gradual formation of land?

- a) Coral island
- b) Barrier island
- c) Deltaic island
- d) Volcanic island

Correct Answer: c) Deltaic island

8. Which of the following terms refers to the study of the historical changes in the distribution of organisms in response to past climatic conditions and geological events?

- a) Paleoecology
- b) Historical biogeography
- c) Ecological succession
- d) Biogeographic realms

Correct Answer: b) Historical biogeography

9. The concept of "niche conservatism" suggests that:

- a) Species adapt rapidly to new environments
- b) Species tend to retain their ancestral ecological roles
- c) Species have fixed, unchanging niches
- d) Competition is the primary driver of niche evolution

Correct Answer: b) Species tend to retain their ancestral ecological roles

10. Which of the following factors is a primary driver of the latitudinal gradient in species richness, where species diversity tends to be higher near the equator?

- a) Altitude
- b) Temperature
- c) Soil pH
- d) Water availability

Correct Answer: b) Temperature

11. The concept of "biotic interchange" is associated with the movement of species between:

- a) Different continents
- b) Different elevations within a mountain range

- c) Different latitudinal zones
- d) Different island ecosystems

Correct Answer: a) Different continents

12. Which of the following is an example of a biological invasion leading to changes in biogeographic patterns?

- a) The introduction of rabbits to Australia
- b) The natural colonization of islands by birds
- c) The formation of coral reefs in tropical seas
- d) The adaptation of plants to local soils

Correct Answer: a) The introduction of rabbits to Australia

13. The process of "adaptive radiation" is characterized by:

- a) The extinction of species in response to environmental change
- b) The rapid diversification of a single ancestral species into multiple new species
- c) The convergence of unrelated species in the same ecosystem
- d) The stabilization of species diversity over time

Correct Answer: b) The rapid diversification of a single ancestral species into multiple new species

14. Which of the following biogeographic regions is known for its unique biodiversity hotspot, the Galápagos Islands?

- a) Nearctic
- b) Neotropical
- c) Afrotropical
- d) Australasian

Correct Answer: b) Neotropical

15. Which biogeographic region includes the African savannas and the Sahara Desert?

- a) Nearctic
- b) Neotropical
- c) Afrotropical
- d) Australasian

Correct Answer: c) Afrotropical

16. What term describes the process by which species gradually evolve and adapt to new ecological niches in response to competition with other species?

- a) Competitive exclusion
- b) Niche differentiation
- c) Ecological succession
- d) Niche overlap

Correct Answer: b) Niche differentiation

17. Which of the following terms refers to a group of species that share a common ancestor and are typically found in a specific geographic area?

- a) Ecotone
- b) Biogeographic realm
- c) Species assemblage
- d) Clade

Correct Answer: d) Clade

18. Which of the following factors is a major driver of long-distance dispersal of species to remote islands?

- a) Strong winds
- b) Ocean currents
- c) Volcanic activity
- d) Competition

Correct Answer: a) Strong winds

19. The concept of "island equilibrium theory" predicts that larger islands will generally have:

- a) Fewer species than smaller islands

- b) Greater species diversity than smaller islands
- c) The same species composition as the mainland
- d) No effect on species diversity

Correct Answer: b) Greater species diversity than smaller islands

20. What is the term for a species that is found in a specific geographic area and nowhere else in the world?

- a) Keystone species
- b) Endemic species
- c) Pioneer species
- d) Generalist species

Correct Answer: b) Endemic species

21. Which type of biome is characterized by the presence of permafrost and a treeless landscape with low-growing vegetation?

- a) Tundra
- b) Taiga
- c) Chaparral
- d) Temperate deciduous forest

Correct Answer: a) Tundra

22. The process of "speciation" refers to:

- a) The evolution of species that are identical in all aspects
- b) The formation of new species through the splitting of existing populations
- c) The convergence of unrelated species in the same habitat
- d) The extinction of species due to environmental change

Correct Answer: b) The

formation of new species through the splitting of existing populations

23. Which of the following factors plays a significant role in determining the distribution of deep-sea organisms in the ocean?

- a) Sunlight penetration
- b) Wind patterns
- c) Ocean currents
- d) Soil type

Correct Answer: a) Sunlight penetration

24. The process of "biological coevolution" is exemplified by:

- a) The development of similar traits in unrelated species
- b) The adaptation of species to different niches within the same ecosystem

c) The mutualistic relationships between pollinators and flowering plants

d) The competition between species for limited resources

Correct Answer: c) The mutualistic relationships between pollinators and flowering plants

25. Which of the following is an example of a biome with a Mediterranean climate, characterized by mild, wet winters and hot, dry summers?

a) Desert

b) Taiga

c) Chaparral

d) Temperate grassland

Correct Answer: c) Chaparral

26. What is the term for the process by which two species evolve in response to one another, often resulting in highly specialized interactions?

a) Niche differentiation

b) Competitive exclusion

c) Coevolution

d) Ecological succession

Correct Answer: c) Coevolution

27. The concept of "biogeographic corridors" refers to:

- a) Regions with exceptionally high species diversity
- b) Geographical pathways that allow species to disperse between isolated areas
- c) The separation of a population by geographic barriers
- d) The rapid diversification of species in a specific ecosystem

Correct Answer: b) Geographical pathways that allow species to disperse between isolated areas

28. Which of the following is an example of a terrestrial biome characterized by sparse vegetation and extreme temperature variations?

- a) Desert
- b) Tundra
- c) Savanna
- d) Temperate deciduous forest

Correct Answer: a) Desert

29. The process of "island biogeography" predicts that islands farther from the mainland will generally have:

- a) Higher species diversity

- b) Lower species diversity
- c) The same species composition as the mainland
- d) No effect on species diversity

Correct Answer: b) Lower species diversity

30. Which factor is most likely to lead to the formation of distinct subspecies within a population?

- a) High gene flow
- b) Geographic isolation
- c) Niche overlap
- d) Strong competition

Correct Answer: b) Geographic isolation

31. Which of the following is a major factor contributing to the decline of biodiversity in freshwater ecosystems such as lakes and rivers?

- a) Overfishing
- b) Ocean currents
- c) Soil erosion
- d) High water temperature

Correct Answer: c) Soil erosion

32. The concept of "biogeographic provinces" is used to:

- a) Describe the distribution of marine organisms
- b) Divide the Earth into distinct biogeographic regions based on shared species
- c) Explain the formation of volcanic islands
- d) Classify species based on their niche preferences

Correct Answer: b) Divide the Earth into distinct biogeographic regions based on shared species

33. Which of the following factors is a major driver of the distribution of vegetation in terrestrial ecosystems?

- a) Air pressure
- b) Ocean currents
- c) Soil pH
- d) Precipitation patterns

Correct Answer: d) Precipitation patterns

34. The term "biodiversity hotspot" refers to areas that:

- a) Have extremely low species diversity
- b) Are completely devoid of life
- c) Harbor a high number of endemic species and are under threat of habitat loss
- d) Are protected from human impact

Correct Answer: c) Harbor a high number of endemic species and are under threat of habitat loss

35. What is the primary driver of the formation of oceanic islands, such as those in the Hawaiian archipelago?

- a) Volcanic activity
- b) Continental drift
- c) Wind erosion
- d) Glacial movement

Correct Answer: a) Volcanic activity

36. The process of "biogeographic filtering" refers to:

- a) The introduction of invasive species to new ecosystems
- b) The adaptation of species to new environments
- c) The selective movement of species into specific habitats
- d) The random dispersal of species to different areas

Correct Answer: c) The selective movement of species into specific habitats

37. Which of the following is a major factor contributing to the decline of coral reefs worldwide?

- a) Increased ocean salinity

- b) Enhanced protection and conservation efforts
- c) Ocean acidification
- d) Decreased water temperature

Correct Answer: c) Ocean acidification

38. Which of the following biomes is characterized by an abundance of broadleaf deciduous trees that shed their leaves in the fall?

- a) Desert
- b) Taiga
- c) Temperate deciduous forest
- d) Grassland

Correct Answer: c) Temperate deciduous forest

39. The concept of "source-sink dynamics" in island biogeography suggests that:

- a) Islands are always sources of species dispersal to the mainland
- b) Some islands act as sources of species production, while others act as sinks where species go extinct
- c) Species on islands are unaffected by dispersal
- d) Sink islands have higher species diversity than source islands

Correct Answer: b) Some islands act as sources of species production, while others act as sinks where species go extinct

40. Which of the following factors is a major driver of the distribution of marine organisms in coastal ecosystems?

- a) Altitude
- b) Wave action
- c) Soil composition
- d) Elevation

Correct Answer: b) Wave action

41. The concept of "biological corridors" is related to the conservation of biodiversity and refers to:

- a) Regions with exceptionally high species diversity
- b) Geographical pathways that facilitate the movement of species between fragmented habitats
- c) The rapid diversification of species in a specific ecosystem
- d) The establishment of protected reserves for endangered species

Correct Answer: b) Geographical pathways that facilitate the movement of species between fragmented habitats

42. Which of the following factors can lead to the formation of "island gigantism" or "island dwarfism" in species on isolated islands?

- a) High levels of competition
- b) Predation pressure

- c) Availability of food resources
- d) Genetic mutations

Correct Answer: c) Availability of food resources

43. The process of "range expansion" occurs when a species:

- a) Experiences a reduction in its geographic distribution
- b) Successfully colonizes new areas beyond its current range
- c) Forms distinct subspecies within its existing range
- d) Specializes in a narrow ecological niche

Correct Answer: b) Successfully colonizes new areas beyond its current range

44. Which of the following biomes is characterized by grasslands with a pronounced dry season, often experiencing wildfires?

- a) Desert
- b) Tundra
- c) Savanna
- d) Temperate rainforest

Correct Answer: c) Savanna

45. The concept of "microendemism" refers to:

- a) The distribution of species across entire continents
- b) The presence of a single species within a specific habitat
- c) The movement of species between islands and the mainland
- d) The evolution of convergent traits in unrelated species

Correct Answer: b) The presence of a single species within a specific habitat

46. Which of the following factors is responsible for the formation of unique ecosystems on oceanic islands, such as the Galápagos?

- a) Continental drift
- b) Wind patterns
- c) Volcanic activity
- d) Ocean currents

Correct Answer: c) Volcanic activity

47. The term "biogeographic disjunction" refers to:

- a) The presence of similar species in different geographic areas
- b) The separation of populations within the same habitat
- c) The movement of species between islands and the mainland
- d) The rapid diversification of species in response to ecological competition

Correct Answer: a) The presence of similar species in different geographic areas

48. Which of the following is a primary factor contributing to the decline of amphibian populations in many parts of the world?

- a) Low soil pH
- b) Air pollution
- c) High reproductive rates
- d) Lack of suitable habitats

Correct Answer: b) Air pollution

49. Which type of biome is characterized by evergreen trees, moderate temperatures, and high precipitation, often with mist or fog?

- a) Desert
- b) Tundra
- c) Temperate rainforest
- d) Grassland

Correct Answer: c) Temperate rainforest

50. The concept of "biotic interchange" is most relevant to which type of biogeographic phenomenon?

- a) Invasion of non-native species
- b) Adaptive radiation
- c) Continental drift
- d) Speciation through hybridization

Correct Answer: a) Invasion of non-native species