

2024

**Environmental Science and Natural Resources
CDE Exam – Idaho FFA**

- There are 50 questions on this test.
- There is only one correct answer per question.
- Carefully fill in the correct answer on the Scantron.
- Return this copy of questions to the test monitor before you leave the room.
- Good luck.

1. If after examining several carcasses of dead crow and ravens, a scientist speculates that they died of West Nile Virus, this speculation is best referred to as:
 - a. an observation
 - b. **a hypothesis**
 - c. a theory
 - d. a natural law

2. Regularly taking photos and collecting information over time to document change in a plant community is called:
 - a. Bio-analysis
 - b. Statistical replication
 - c. An inventory
 - d. **Monitoring**

3. Energy derived from the natural heat of the Earth's interior is called:
 - a. Nuclear
 - b. Finite
 - c. Endemic
 - d. **Geothermal**

4. A temperature inversion occurs when:
 - a. a layer of cold air traps a layer of warm air near the surface
 - b. a layer of pollution traps a layer of warm air near the surface
 - c. **a layer of warm air traps a layer of cold air near the surface**
 - d. a fast increase in temperature creates a swift wind at the surface

5. Most of the solar radiation that reaches the earth's atmosphere is:
 - a. Reflected off the ocean back into space.
 - b. Reflected off clouds back into space.
 - c. Absorbed by the atmosphere producing rain.
 - d. **Absorbed by land or water to heat the earth.**

6. Nitrogen, potassium, and phosphorus are _____ that are essential for plant growth.
 - a. Organics
 - b. Micronutrients
 - c. **Macronutrients**
 - d. Bio-enzymes

7. The way in which man has most directly affected the phosphorus cycle has been through:
 - a. **the mining of phosphate rocks to make fertilizers and detergents**
 - b. the mining of ocean phosphates to cause eutrophication
 - c. the burning of fossil fuels
 - d. the burning of the tropical rain forests

8. The largest reservoir for nitrogen is the:
 - a. ocean
 - b. bodies of plants and animals
 - c. soil and rocks
 - d. **atmosphere**

9. Legumes are members of the pea family that are important native and agricultural plants because they:
 - a. are wind pollinated and therefore can grow in a large range of ecosystems.
 - b. have a specialized metabolism that captures more atmospheric carbon than most plants.
 - c. are highly tolerant of soils that accumulate salt and carbonates.
 - d. **host microbes that convert atmospheric nitrogen into biologically available nitrogen.**

10. Which of the following is the equation for respiration (which is the opposite of photosynthesis)?
 - a. $\text{CH}_4 + \text{H}_2\text{O} \Rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2$
 - b. **$\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 + \text{H}_2\text{O} \Rightarrow \text{CO}_2 + \text{H}_2\text{O}$**
 - c. $\text{C}_6\text{H}_{12}\text{O}_6 + \text{CO}_2 \Rightarrow \text{O}_2 + \text{H}_2\text{O}$
 - d. $\text{CO}_2 + \text{H}_2\text{O} \Rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + \text{CH}_4$

11. Which is the most abundant element found in living organisms?
- a. Carbon
 - b. Nitrogen
 - c. **Oxygen**
 - d. Phosphorus
12. The idea that land managers should conduct activities so that the productive capacity of the land is maintained and available for future generations is called:
- a. Multiple use
 - b. Successional
 - c. Restoration
 - d. **Sustainability**
13. Agricultural and grazing practices aimed at improving soil organic matter and restoring degraded soil biodiversity is called:
- a. Successional
 - b. Untenable
 - c. **Regenerative**
 - d. Conventional
14. A thick waxy covering on the leaves and stems of plants are adaptations to _____ conditions:
- a. Humid
 - b. **Dry**
 - c. Cold
 - d. Alkaline
15. Transpiration is the process by which:
- a. **Plants absorb water and then give off water vapor through pores in their leaves.**
 - b. Water is filtered down through aerated soil by gravity.
 - c. Water evaporates off the surface of lakes and wetlands creating humidity.
 - d. Microbes absorb water through their surface to support metabolism.
16. Why are bees considered some of the most efficient pollinators?
- a. They feed exclusively on nectar.
 - b. **Their bodies are adapted to collect and transfer pollen**
 - c. They can fly long distances.
 - d. They have no natural predators.
17. Several studies have been conducted on how hot weather affects dairy cattle. It has been found that cattle produce the most milk in conditions from 25° to 65° F. This temperature range is called the _____ range.
- a. **optimal**
 - b. tolerable
 - c. potential
 - d. lactation
18. A species is best defined as:
- a. any individual plant, animal, or microbe.
 - b. a group of plants, animals, and microbes in a particular place.
 - c. **a kind of plant, animal, or microbe that can interbreed and produce fertile young.**
 - d. a group of plants, animals, and microbes and their abiotic surroundings.
19. The productivity of terrestrial ecosystems is primarily determined by:
- a. Soil fertility
 - b. **Temperature and Precipitation**
 - c. Human Activities
 - d. Solar Radiation
20. The plant communities of low growing shrubs and grasses that dominate high latitudes and altitudes are:
- a. **Tundra**
 - b. Savannas
 - c. Scrublands
 - d. Deciduous woodlands

21. Which of the following is a primary producer?
- a. cows
 - b. **trees**
 - c. blue crabs
 - d. striped bass
22. Animals that were once domesticated but have reverted to a wild state are called _____ animals.
- a. reverted
 - b. introduced
 - c. undomestic
 - d. **feral**
23. Primary succession occurs when...
- a. **An ecosystem is highly damaged or destroyed so no soil remains.**
 - b. Organisms live in an area where they did not live before.
 - c. Plants grow to a level that displaces animals from an environment.
 - d. A community is altered but remnants of a former community still exist.
24. An important factor that maintains grassland ecosystems is:
- a. Well-drained sandy soils
 - b. Precipitation greater than 50 inches per year
 - c. **Occasional fire**
 - d. Abundant pollinators
25. Most, about 70%, of the fresh water on earth is found in:
- a. Groundwater and aquifers
 - b. Streams and rivers
 - c. Lakes and wetlands
 - d. **Polar ice caps and glaciers**
26. The study of the biological, chemical, and physical features of lakes and other bodies of fresh water is called:
- a. Pedology
 - b. **Limnology**
 - c. Aquaculture
 - d. Hydrogeology
27. Soils deposited by water movement along rivers, in floodplains and deltas, and on stream terraces are called _____ soils.
- a. **alluvial**
 - b. gravitational
 - c. loessal
 - d. glacial
28. What is it called when the water in soil that is so tightly attached to the soil particles, that it is unavailable for plant root absorption?
- a. Capillary
 - b. Gravitational
 - c. **Hygroscopic**
 - d. Osmotic
29. Why is salinization of soils a "bad" thing for croplands:
- a. it decreases the amount of water available to plants
 - b. it decreases crop yields per acre
 - c. it can lead to desertification
 - d. **all of the above**
30. Geologic formations of soil, sand, and rocks below the surface where water is stored and slowly circulated are called a _____.
- a. **Aquifer**
 - b. Perennial spring
 - c. Lentic area
 - d. Recharge zone

31. A riparian area can be described as:
- The grassy areas located along the borders of a field.
 - Land and vegetation adjacent or near the banks of a waterway.**
 - Areas that are covered with water at least part of the year.
 - The ridge or high area from which water drains either toward or away from a watershed.
32. _____ is a species of fish adapted to cold, running water in streams.
- Carp
 - Catfish
 - Trout**
 - Sunfish
33. Each groundwater source has a unique taste, color, and odor created by dissolved:
- Acids
 - Minerals**
 - Bacteria
 - Organic exudates
34. About what proportion of the world's surface is covered by forest?
- one tenth (10%)
 - one third (30%)**
 - one half (50%)
 - three quarters (75%)
35. The ability of a given area to provide food, water, and shelter for the population of a given animal is defined as:
- Maximum daily load
 - Carrying capacity**
 - Resource consumption
 - Minimum viable population
36. Pasturelands are differentiated from rangelands because they:
- are grazed by domestic livestock whereas rangeland may not be
 - are periodically cultivated and managed by agronomic principles**
 - occur only in temperate regions whereas rangelands occur worldwide
 - occur on soils that are too saline to support the native grasses and shrubs of rangeland.
37. Virtual Fence is a modern approach for keeping animals in pastures or outside of specific areas without wire and posts. Virtual Fence works by:
- Animals wearing devices that know their location and give them a shock if they step across a designated boundary.**
 - Blinking lights and aversive sounds along pasture boundaries that keep animals from crossing the boundary.
 - Drones flying over pastures shooting pellets at cattle when they cross the virtual boundary.
 - Spraying a substance that smells like wolf urine along the boundary which keeps animals from crossing.
38. Which of the following trees are examples of softwoods?
- pinus and spruces**
 - maples and hickory
 - oaks and mesquite
 - all of the above
39. Of the major types of forests which has the coldest climate:
- tropical rainforest
 - deciduous forest
 - mesophyllic forest
 - coniferous forest**
40. _____ is the clearing of forests due to logging, agriculture, and other human activities.
- Regenerative forestry
 - Deforestation**
 - Successional Change
 - Disturbance Ecology

41. What is Idaho's State Tree?
- a. **Western White Pine**
 - b. Rocky Mountain Maple
 - c. Quaking Aspen
 - d. Ponderosa Pine
42. Fire may affect an ecosystem in all of the following ways except:
- a. Controlling insect pests by removing the excess detritus in which they live.
 - b. **Promoting the growth of deciduous trees like oak.**
 - c. Releasing the inorganic nutrients bound in organic matter like wood.
 - d. Removing excess debris that can decrease germination of some plants.
43. Which type of plant has the greatest proportion of its biomass below ground (i.e., roots)
- a. Trees
 - b. Shrubs
 - c. Forbs
 - d. **Grasses**
44. A plant that contains natural chemicals that can cause digestive, neurological or physiological damage to animals when eaten are called:
- a. Anoxic
 - b. **Toxic**
 - c. Noxious
 - d. Exotic
45. Warblers, thrushes, tanagers, and vireos are all examples of:
- a. Migratory Waterfowl
 - b. Upland Game Birds
 - c. **Neotropical Migrants**
 - d. Exotic Introduced Birds
46. When two species of wildlife live together for the benefit of both, the relationship is called
- a. Competition
 - b. Predation
 - c. Commensalism
 - d. **Mutualism**
47. Which of these would be considered a keystone species?
- a. **Grey wolf**
 - b. White-footed mice
 - c. White-tailed deer
 - d. Red fox
48. The seasonal movement of animals from one region to another for breeding, feeding, or other reasons is called:
- a. Extirpation
 - b. **Migration**
 - c. Relocation
 - d. Endogeny
49. The greatest threat to wildlife in the world is:
- a. increasing ultra-violet radiation due to ozone depletion
 - b. **habitat loss and destruction due to human activities**
 - c. toxic pollution in water
 - d. acid rain
50. Theodore Roosevelt believed that natural resources should be used but that they needed to be carefully managed so that they would be available for use and enjoyment by future generations. Mr. Roosevelt was a person who followed the:
- a. **conservation ethic**
 - b. appreciation ethic
 - c. exploitation ethic
 - d. preservation ethic