

2025 AREA CEI TEST-CLIMATE CHANGE PROJECTIONS KEY

1. Climate change is accelerating due to increased amounts of greenhouse gases being trapped in earth's atmosphere. What is the primary contributing greenhouse gas? (page 4-5)
 - a. **Carbon dioxide**
 - b. Methane
 - c. Nitrous oxide
 - d. F-gases
2. Local, regional, and global weather patterns are evidence of climate change. In Ohio, we experience this evidence in which of the following ways? (page 4)
 - a. **Average temperatures and frequency/intensity of extreme weather events both increase**
 - b. Average temperatures increase and frequency/intensity of extreme weather events decrease
 - c. Average temperatures decrease and frequency/intensity of extreme weather events increase
 - d. Average temperatures and frequency/intensity of extreme weather events both decrease
3. Climate change may cause river flooding to become more intense and more frequent and other regions are experiencing less intense and less frequent flooding episodes. Characterize river flooding trends in Ohio over the past several decades. (page 8)
 - a. **Increased intensity and increased frequency**
 - b. Increased intensity and decreased frequency
 - c. Decreased intensity and increased frequency
 - d. Decreased intensity and decreased frequency
4. There are countless climate change models and projections that have been done to estimate future conditions at local, regional, and global scales. The Representative Concentration Pathways (RCPs) are used by the US Forest Service's Climate Change Tree Atlas. Which of the following is considered the worst- case scenario? (page 21, <https://www.fs.usda.gov/nrs/atlas/>)
 - a. RCP1.0
 - b. RCP2.6
 - c. RCP4.5
 - d. **RCP8.5**
5. The effects of climate change are global; however, climate change risk disproportionately affects _____.: (page 25-28)
 - a. The richest countries and their citizens
 - b. The countries contributing most to greenhouse gas emissions
 - c. **Countries with forestry, agriculture, and fish dependent economies**
 - d. Countries with more robust health care system

6. Climate change has a significant impact on sustainable forest management due to elevated invasive species concerns. In Ohio, which of the following phenomena are indicative of that impact? (page 32)
 - a. White pine infestation by bagworms
 - b. Ash tree devastation by emerald ash borer**
 - c. Dogwood by dogwood sawfly
 - d. Oak by periodic cicadas
7. Wildfire has notable impacts on forests and wildlife. Which of the below is true? (page 34)
 - a. High-severity fires result in ashes of burnt plants, leaves, and other debris that enrich the soil
 - b. Low-intensity fires result in runoff containing ash and debris flows into lakes and streams
 - c. Low-intensity fires result in wildlife species isolated in smaller areas, where food and mates are lacking
 - d. High-severity fires result in loss of bare mineral soil which slows the rate of natural revegetation.**
8. Mountain pine beetles are native to northern latitude mixed forests in western US and Canada. What effect has the addition of climate change had on the mountain pine beetles? (page 36)
 - a. Mountain pine beetle impact increases because of drought-related stress**
 - b. Mountain pine beetle impact decreases because trees have a longer growing season
 - c. Mountain pine beetle impact decreases because host tree distribution is shifting
 - d. Mountain pine beetle impact increases because harsher winters stress trees
9. There are many non-native forest insect pests that are impacting Ohio's forests. Which of the following invasive pests are impacting more than one host genus of native trees or shrubs? (page 42)
 - a. Viburnum leaf beetle
 - b. Asian long-horned beetle**
 - c. Emerald ash borer
 - d. Walnut twig beetle
10. Under climate change scenarios and factoring in anticipated moisture patterns, what biome shift is most likely to occur along the US/Canada boundary? (page 53)
 - a. Boreal forests will expand south into the US
 - b. Temperate rainforests will expand further east along US/Canada border
 - c. Prairies will expand north into Canada**
 - d. Tundra will expand further south in Canada nearing the US border

INHERENT RIGHTS OF INDIGENOUS PEOPLES TO LAND STEWARDSHIP

11. The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) is an agreement among governments on how indigenous peoples should be treated. Which of the following is stated under the UNDRIP? (page 61-67)
 - a. Indigenous peoples have the right to be citizens of the country they live in or be a member of their indigenous community, but not both.

- b. Governments will legally recognize the lands of indigenous people, but do not have to protect them.
 - c. Indigenous people must adopt the culture of their chosen country.
 - d. Governments will protect the religions of indigenous peoples.**
12. The phrase “Two-Eyed Seeing” blends which 2 paradigms together? (page 57)
- a. Western science and Religion
 - b. Capitalism and Western science
 - c. Spirituality and Traditional Ecological Knowledge
 - d. Traditional Ecological Knowledge and Western science**
13. A case study from the Ngarang-Wa Indigenous lands of Australia highlighted which of the following restoration activity that couples scientific and Indigenous knowledge? (CEI Youtube: https://youtu.be/PiQCI329TBY?si=Xp2wCrGa3_h5lytK) and page 77)
- a. Tightly planting native mat-rush grass for stabilizing riparian areas**
 - b. Introduction of toads to control invasive pests
 - c. Eliminate algae because of its harmful impact to aquatic macroinvertebrates
 - d. Using herbicide to remove non-native woody shrub species
14. Bison restoration conducted on behalf of Indigenous Plains Peoples seeks to honor which of the following objective? (page 71)
- a. Creates commercial markets for exploitation.
 - b. Degrades the prairie ecosystem.
 - c. Reintroduces a culturally and spiritually important icon.**
 - d. Advances food insecurity for Indigenous Peoples.

VULNERABILITY ASSESSMENTS AND ADAPTATION STRATEGIES

15. Climate change vulnerability assessments are a formal way to understand climate impact and carefully craft our management response. “The extent to which climate and climate-related changes may affect a resource or place” is defined as _____, a key concept in all vulnerability assessments. (page 86)
- a. Sensitivity**
 - b. Adaptive capacity
 - c. Exposure
 - d. Danger level
16. Forest adaptation strategies must anticipate shifts in suitable growing conditions. As a practical response to this, managers should do which of the following? (page 89)
- a. Plant low diversity forests of species which will probably thrive in the future.
 - b. Rely on historical prescriptions to conduct forest management.
 - c. Anticipate shifts in plant hardiness zones and manage accordingly.**
 - d. Eliminate all species with low predicted future viability through harvest.
17. Birds can be a barometer of environmental change. Which of the below is a response of the avian community to forest management practices? Mature forest breeding birds, such as Magnolia warblers, do not benefit from forest harvests that create early successional habitat. (Citation and CEI, pages 100 - 105)
- a. High-severity fires across large, forested landscapes provide sustainable habitat for birds.

- b. **Forest harvest patterns that emulate natural disasters benefit birds and promote forest biodiversity.**
 - c. Removal of non-native, invasive plants, such as honeysuckle, eliminates an important food source for forest birds.
 - d. None of the above
- 18. Nesting by birds in California's Sierra Nevada mountains has on average advanced by a week over the past century. This is an example of what adaptive response? (page 92-92)
 - a. **Shift in space**
 - b. Exposure sensitivity
 - c. **Persist in place**
 - d. Phenological persistence
- 19. Vulnerability to climate change is the degree to which systems are susceptible to, and unable to cope with, the adverse effects of climate change. In natural resources management, vulnerability is a function of what three important components? (page 86)
 - a. Sensitivity, adaptive capacity, and scientific information
 - b. Exposure, sensitivity, and static capacity
 - c. Western science, exposure, and sensitivity
 - d. **Exposure, sensitivity, and adaptive capacity**

LEGISLATION AND REGULATIONS

- 20. Sustainable forest management carefully balances diverse values from 3 primary pillars. Which of the following pillars are the correct set? (page 119)
 - a. Economic, Environmental, and Religious
 - b. Carbon, Cash, and Communities
 - c. **Economic, Environmental, and Cultural**
 - d. Environmental, Cultural, and Social
- 21. Clearcutting is a forest harvest technique that historically has suffered from a bad public image and lots of intense opposition. Sustainable Forest Management (SFM) Certifications in Canada have which of the following policies related to clearcutting? (page 127)
 - a. No harvest by clearcutting is allowed under certified SFM programs.
 - b. **Harvests by clearcutting are allowed when they are the ecologically appropriate method for a forest.**
 - c. Harvests by clearcutting are only allowed if the local community votes to grant permission.
 - d. No harvests by clearcutting are allowed in sight of any public road or water body.
- 22. At the global scale, deforestation is a major concern within the larger issue of climate change. In Ohio over the past century or so, which of the following statements describes trends in overall forest cover? (page 128-131)
 - a. **Forest cover in Ohio has increased drastically in the past 100 years.**
 - b. Forest cover in Ohio has remained relatively stable in the past 100 years.
 - c. Forest cover in Ohio has decreased drastically in the past 100 years.

- d. Forest cover in Ohio has gone through cycles (40-50 years) of planting and harvesting trees.
23. The US Department of Agriculture launched its Justice40 Initiative by Executive Order 14008. What is the primary charge of the Justice40 Initiative? (page 137)
- a. That the quote “Back 40” private woodland owner become the focus of US Forest Service efforts.
 - b. That 40% of the overall benefits from federal investments in climate and clean energy reach disadvantaged communities.**
 - c. That \$40B be invested in rural-urban interface wildfire mitigation efforts in the next decade.
 - d. That 40 million trees be planted in urban areas before 2030 to increase green space for metro populations.

THE BOREAL FOREST

24. Boreal forests are one of the largest forest ecosystems on the planet. Canada contains almost a third of this forest ecosystem and its management impacts the health of the environment worldwide. These systems store vast amounts of carbon, so much so that in the northern region of the hemisphere during spring and summer: (page 175-180)
- a. Worldwide carbon levels fall, and oxygen levels rise**
 - b. Regionally photosynthesis decreases and oxygen levels rise
 - c. Worldwide carbon levels fall, and temperatures decrease
 - d. Regionally temperatures increase and worldwide carbon levels increase
25. Climate change causes average temperatures to rise. While many parts of the world are seeing this impact of climate change, the forested area where this temperature increase is currently most notable is (page 182-184)
- a. Temperate deciduous forests
 - b. Tropical forests
 - c. Boreal forests**
 - d. Temperate coniferous forests
26. Canada’s boreal forest is home to 25% of the world’s wetlands. These boreal wetlands include boreal peatlands (a type of wetland) that is sequestering carbon in vast amounts. What makes these boreal wetlands unique to other parts of the world? (page 187-197)
- a. They are still very much intact and pristine**
 - b. They are located only in indigenous communities
 - c. They are home to waterfowl and mammals
 - d. They yield various economic products