

Advanced Placement Environmental Science Exam Review

The AP Exam is 100 multiple choice questions and four free-response questions

The Final Exam is 200 multiple choice questions

I. Earth Systems and Resources (10-15 questions on AP Exam, 20 questions on Final)

- A. Earth Science Concepts (Geologic time scale; plate tectonics, earthquakes, volcanism; seasons; solar intensity and latitude) (5 questions on Final)
- B. The Atmosphere (Composition; structure; weather and climate; atmospheric circulation and the Coriolis Effect; atmosphere-ocean interactions; ENSO) (5 questions on Final)
- C. Global Water Resources & Use (Freshwater/saltwater; ocean circulation; agricultural, industrial, & domestic use; surface & groundwater issues; global problems; conservation) (5 questions on Final)
- D. Soil and Soil Dynamics (Rock cycle; formation; composition; physical and chemical properties; main soil types; erosion and other soil problems; soil conservation) (5 questions on Final)

II. The Living World (10-15 questions on AP Exam, 25 questions on Final)

- A. Ecosystem Structure (Biological populations & communities; ecological niches; interactions among species; keystone species; species diversity & edge effects; major terrestrial & aquatic biomes) (6 questions on Final)
- B. Energy Flow (Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids) (3 questions on Final)
- C. Ecosystem Diversity (Biodiversity; natural selection; evolution; ecosystem services) (5 questions on Final)
- D. Natural Ecosystem Change (Climate shifts; species movement; ecological succession) (3 questions on Final)
- E. Natural Biogeochemical Cycles (Carbon, nitrogen, phosphorus, sulfur, water, conservation of matter) (8 questions on Final)

III. Population (10-15 questions on AP Exam, 20 questions on Final)

- A. Population Biology Concepts (Population ecology; carrying capacity; reproductive strategies; survivorship) (6 questions on Final)
- B. Human Population
 - 1. Human population dynamics (Historical population sizes; distribution; fertility rates; growth rates and doubling times; demographic transition; age-structure diagrams) (6 questions on Final)
 - 2. Population size (Strategies for sustainability; case studies; national policies) (4 questions on Final)
 - 3. Impacts of population growth (Hunger; disease; economic effects; resource use; habitat destruction) (4 questions on Final)

IV. Land and Water Use (10-15 questions on AP Exam, 27 questions on Final)

- A. Agriculture
 - 1. Feeding a growing population (Human nutritional requirements; types of agriculture; Green Revolution; genetic engineering and crop production; deforestation; irrigation; sustainable agriculture) (3 questions on Final)
 - 2. Controlling pests (Types of pesticides; costs and benefits of pesticide use; integrated pest management; relevant laws) (4 questions on Final)
- B. Forestry (Tree plantations; old growth forests; forest fires; forest management; national forests) (3 questions on Final)
- C. Rangelands (Overgrazing; deforestation; desertification; rangeland management; federal rangelands) (2 questions on Final)
- D. Other Land Use
 - 1. Urban land development (Planned development; suburban sprawl; urbanization) (2 questions on Final)
 - 2. Transportation infrastructure (Federal highway system; canals and channels; roadless areas; ecosystem impacts) (1 question on Final)
 - 3. Public and federal lands (Management; wilderness areas; national parks; wildlife refuges; forests; wetlands) (2 questions on Final)
 - 4. Land conservation options (Preservation; remediation; mitigation; restoration) (2 questions on Final)
 - 5. Sustainable land-use strategies (1 question on Final)
- E. Mining (Mineral formation; extraction; global reserves; relevant laws) (2 questions on Final)
- F. Fishing (Fishing techniques; overfishing; aquaculture; relevant laws) (3 questions on Final)
- G. Global Economics (Globalization; World Bank; Tragedy of the Commons; relevant laws) (2 questions on Final)

V. Energy Resources and Consumption (10-15 questions on AP Exam, 26 questions on Final)

- A. Energy Concepts (Energy forms; power; units; conversions; Laws of Thermodynamics) (2 questions on Final)
- B. Energy Consumption
 - 1. History (Industrial Revolution; exponential growth; energy crisis) (1 question on Final)
 - 2. Present global energy use (2 questions on Final)
 - 3. Future energy needs
- C. Fossil Fuel Resources and Use (Formation of coal, oil, and natural gas; extraction/purification methods; world reserves and global demand; synfuels; environmental advantages/disadvantages of sources) (5 questions on Final)
- D. Nuclear Energy (Nuclear fission process; nuclear fuel; electricity production; nuclear reactor types; environmental advantages/disadvantages; safety issues; radiation and human health; radioactive wastes; nuclear fusion) (5 questions on Final)
- E. Hydroelectric Power (Dams; flood control; salmon; silting; other impacts) (3 questions on Final)
- F. Energy Conservation (Energy efficiency; CAFE standards; hybrid electric vehicles; mass transit) (3 questions on Final)
- G. Renewable Energy (Solar energy; solar electricity; hydrogen fuel cells; biomass; wind energy; small-scale hydroelectric; ocean waves & tidal energy; geothermal; environmental advantages/disadvantages) (5 questions on Final)

VI. Pollution (25-30 questions on AP Exam, 40 questions on Final)

- A. Pollution Types
 - 1. Air pollution (Sources-primary and secondary; major air pollutants; measurement units; smog; acid deposition-causes and effects; heat islands and temperature inversions; indoor air pollution; remediation and reduction strategies; Clean Air Act and other relevant laws) (11 questions on Final)
 - 2. Noise pollution (Sources; effects; control measures) (2 questions on Final)
 - 3. Water pollution (Types; sources, causes, and effects; cultural eutrophication; groundwater pollution; maintaining water quality; water purification; sewage treatment/septic systems; Clean Water Act and other relevant laws) (10 questions on Final)
 - 4. Solid waste (Types; disposal; reduction) (3 questions on Final)
- B. Impacts on the Environment and Human Health
 - 1. Hazards to human health (Environmental risk analysis; acute and chronic effects; dose response relationships; air pollutants; smoking and other risks) (5 questions on Final)
 - 2. Hazardous chemicals in the environment (Types of hazardous waste; treatment/disposal of hazardous waste; cleanup of contaminated sites; biomagnification; relevant laws) (5 questions on Final)
- C. Economic Impacts (Cost-benefit analysis; externalities; marginal costs; sustainability) (4 questions on Final)

VII. Global Change (10-15 questions on AP Exam, 17 questions on Final)

- A. Stratospheric Ozone (Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties) (5 questions on Final)
- B. Global Warming (Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties) (6 questions on Final)
- C. Loss of Biodiversity (Habitat loss; overuse; pollution; introduced species; endangered and extinct species, Maintenance through conservation, Relevant laws and treaties) (6 questions on Final)

StreamWatch Topics (0 questions on AP Exam, 25 questions on Final)

- A. Chemical (Procedure, Importance of Nitrate, Phosphate, Dissolved Oxygen, and pH in aquatic systems) (4 questions on the Final)
- B. Physical (Procedure, Importance of Turbidity, Color, Temperature, and Flow Rate in aquatic systems, Influence of Wind and Precipitation on flow rate) (5 questions on the Final)
- C. Benthic Macroinvertebrates (Procedure, Identification of Dragonfly Nymph, Caddisfly Larvae, Pouch Snail, Riffle Beetle, Water Strider, Crayfish, and Leech, Calculation of Stream Index) (5 questions on the Final)
- D. Large Biotics (Procedure, Identification of Mosquitofish, Bluegill, Warmouth, Brown Bullhead Catfish, Shiner, Largemouth Bass, Mallard Duck, Canada Goose, Great Blue Heron, Northern Water Snake, Black Rat Snake, Yellow-Bellied Slider, Spring Peeper, and Southern Leopard Frog) (5 questions on Final)
- E. Forest Transect (Procedure, Identification of Loblolly Pine, White Oak, and Red Maple) (3 questions on Final)
- F. Forest Quadrat (Procedure, Identification of soil types based on texture, porosity, and permeability) (3 questions on the Final)