Exam Study Guides: Environmental Issues

"*The idea of wilderness needs no defense. It only needs more defenders.*" – Edward Abbey

When we open our eyes to it, nature is everywhere: Lotus Flower – Hiroshima, Japan

The Beauty of Nature is Everywhere

Exam I Review For Environmental Issues

Completed readings

Text:

Chapters, 1, 5, 17, 3, 6

Articles:

a) Text: Sustainable Solutions, pages 414-418

b)Text pages 150 -152 GM Foods

c) "Tragedy of the Commons" – Hardin

d) Environmental Collapse of Easter Island

General Test Related Information

1. Study examples; lecture and text terms; case studies; questions posed during class, major readings concepts.
2. Bring a pencil.
3. Any information printed on the PowerPoint overhead is fair game.
4. Any information from the board may be on the exam.
5. Class discussion questions may be on the exam.
6. Information not printed in the very brief PowerPoint outline, such as the definition of a term or an expanded discussion on a specific topic, may be on the exam.
7. I do ask questions which go beyond definitions - questions that make you link several concepts. "Concept understanding" type questions are commonly asked.
8. There will be 40 questions on the exam. Each question will be worth 1point. You may elect to take an essay exam. Let me know before the exam date.
9. If you have not been coming to class, I do not expect you to do well, as I intentionally design questions that are couched in class lectures and discussions – study hard and good luck.

Test 1 General Study Guide

1) What is sustainability and the Triple Bottom Line?

2) Global Distillation Effect - persistent organic pollutants, pressure, biomagnification, policies (Stockholm Convention)…

3) Lake Ecosystem Destruction in Norway & Sweden - multidiscipline approach to solve environmental issues, low pressure, oligotrophic, eutrophic, pH, legislation…

4) Hanford and Yucca controversies - groundwater, vadose zone, hyporheic, capillary action, toxic storage, solutions, Nuclear Waste Policy Act, NIMBY

5) Elk and Wolf Reintroduction - carrying capacity, elk, predator pit, keystone species, aspen ecosystem, increased biodiversity, reintroduction in NY and PA, Surface Mining Control Act

6) Mountaintop Removal: its major environmental impacts, Leveling Appalachia video, Clean Air Act of 1970, SMCRA

7) Shade grown coffee, sustainable agroecosystems and song birds , shade grown vs. sun grown coffee (environmental impacts), solutions, mixed cropping, GM coffee, local foods, GM food controversy…

8) GM Food and Salmon: FDA, Trojan gene, biological pollution…

9) Solid Waste and Deposal Methods - Khian Sea, other examples of waste disposal form around the world, municipal waste stream, pay attention to policies associated with solid (hazardous) waste Basel Convention UNEP, Marine Protection, Research, Sanctuaries Act, Ocean Dumping Ban Act 1988, 12 mile Dump, the Great Garbage Patch (how does it form) coriolis effect, ocean gyres, incineration as a disposal method, incineration pollutants (dioxins), NY Barrel Ban, open dumps disposal, leachate, landfills (how they work), throwaway society, e-waste, e-waste solutions, landfill waste solutions.

10. Population as "the" Environmental Issue - growth & resources

11. Case study on Easter Island: know facts from overheads & reading: Collapse; as a metaphor for earth, biome, ecosystem, desertification, tipping point, overconsumption advanced civilization (religion, government, writing…), food plants, trees, overpopulation, water (examples), deforestation (examples), loss of biodiversity, invasive species (examples)…

Exam I Review For Environmental Issues

Terms and Discussion Topics to Know From Your Text:

Any question from your online readings homework assignment may be on the exam.

Sustainable Solutions: Sustainability: economic opportunity, consuming less, technology, strategies

Chapter 1 – Central Case Study, Science Behind the Story, Testing Your Comprehension, Thomas Malthus, ecological footprint, scientific method, independent and dependent variables, relativists, universalists, ethical standards, environmental ethic, anthorpocentrism, biocentrism, ecocentrism, John Muir, preservation, Gifford Pinchot, Conservation, Aldo Leopold, environmental justice, sustainability, Millennium Ecosystem Assessment; Protocol; From "Testing Your Comprehension" know questions - 2, 6, 7, 8, 9, 10

Chapter 17 – Central Case Study, Science Behind the Story, Testing Your Comprehension, industrial ecology, fly ash , baghouse, environmental justice, deep-well injection, surface impoundments, superfund, brownfields, the largest contributors to the municipal waste stream before and after recycling and composting, drawbacks of landfills, Edmonton recycling program; from "Testing Your Comprehension" know questions – 2, 3, 4, 5, 6, 8,

Chapter 5 – Central Case Study, Science Behind the Story, Testing Your Comprehension, subsistence, centrally planned economies, Adam Smith, classical and neoclassical economics, cost-benefit analysis, ecological economists, steady-sate economics, environmental economist, nonmarket values, free rider, National Environmental Policy Act, Environmental Impact Statement, EPA, UNEP; Protocol; From "Testing Your Comprehension" know questions – 2, 3, 6, 7, 8, 9, 10

Chapter 3 – Central Case Study, Science Behind the Story, Testing Your Comprehension, biodiversity, natural selection, Charles Darwin, Alfred Wallace, artificial selection, species, population, speciation, allopatric speciation, polygenetic trees, mass extinction events, sixth mass extinction, biosphere, ecology, population ecology, community ecology, habitat, niche, specialist, generalist, population distribution and dispersion, age structure and distribution, limiting factors, density dependent and independent; Protocol; From "Testing Your Comprehension" know questions – 3, 5, 6, 7, 8, 9

Chapter 6 - Central Case Study, Science Behind the Story, Testing Your Comprehension, demographic transition, pre-industrial stage I, transitional stage II, industrial stage III, post-industrial stage IV, family planning, poverty and population growth, consumption; Protocol; From "Testing Your Comprehension" know questions – 2, 4, 7, 8, 9, 10

Questions on the exam will come directly from your readings. Approximately 20% of the exam will be from the readings. The questions could be on a subject discussed or not discussed in class. This is to guarantee that you are reading. When studying class readings for the exam focus on major conclusions/points, bold terms, and questions from "Testing Your Comprehension". I will not nitpick and ask date, statistical, overly specific…type questions. Several questions will come directly from your Homework Assignments.

Exam II Review For Environmental Issues

Completed readings

Text:

Chapters: 13, 14, 15, and 16

Articles:

a. Industrial Ecology: From Theory to Practice

b. Acid Precipitation in the Adirondack Mountains

c. The Value of Nature and the Nature of Value

d. The Value of the World's Ecosystem: Services and Natural Capital

Questions on the exam will come directly from your readings. Exactly 20% of the exam will be from the readings. The questions could be on a subject discussed or not discussed in class. This is to guarantee that you are reading. When studying class readings for the exam focus on major conclusions/points, bold terms, and questions from "Testing Your Comprehension". I will not nitpick and ask date, statistical, overly specific…type questions.

General Test Related Information

1. Study examples; lecture and text terms; case studies; questions posed during class, major readings concepts.
2. Bring pencils.
3. Any information printed on the PowerPoint overhead or written on the board may be on the exam.
4. Answer the "Testing Your Comprehension" questions from your book. I will ask questions directly from this section.
5. Class discussion questions may be on the exam.
6. Information not printed in the very brief PowerPoint outline, such as the definition of a term or an expanded discussion on a specific topic, may be on the exam.
7. I do ask questions which go beyond definitions - questions that make you link several concepts. "Concept understanding" type questions are commonly asked.
8. There will be 45 questions on the exam each worth 1point.
9. If you have not been coming to class, I do not expect you to do well, as I intentionally design questions that are couched in class lectures and discussions – study hard and good luck.

Test 2 General Study Guide

1. Case study on Easter Island: environmental issues of overpopulation, water resources, deforestation, and loss of biodiversity (species extinctions & invasive species) on Easter Island and examples of the same issues on planet Earth (i.e. Colorado river , Aral sea, Greece, Oneonta)
2. Population ecology: biotic potential, limiting factors, density dependent
3. Environmental resistances/oscillating growth/logistic growth, examples
4. Population growth curves (J & S curves) & r & K strategy species…
5. Demography: RNI; B & D rates; calculating doubling time, fertility…
6. Population Density: arithmetic & physiological with examples
7. Define different types of "overpopulation" overpopulation and the environment, resource overpopulation, consumption…
8. Malthusian overpopulation and other definitions/philosophy's on population/ resource, subsistence, and consumption overpopulation
9. Solving for overpopulation discussion: >death rate, family planning, education, build a vested environmental ethic, micro lending, late marriage, health care, retirement plan, birth control…
10. Case Studies: Industrialization as a Fundamental Cause of Environmental Issues i.e. industrial air pollution (SO_2, Nox) temperature inversion, smog/ozone, industrial waste at Love Canal, industrial ecosystem, President's Council on Sustainable Development Comprehensive Environmental Response, Compensation, and Liability Act, United Nations Environmental Program (toxins) manufactured gas plant Oneonta.
11. Acid rain overview – Sulfuric & nitric acid. What is acidification? Understand the pH scale.
12. What are the primary emitters of acid rain generating pollutants?
13. Why are the Adirondacks so heavily impacted by acid rain?
14. Air pollution, orographic precipitation, recent glaciation, westerly wind flow, substrate, & vegetation all contribute toward acidification .
15. How does acid rain effect fish? What are critical acidification thresholds for varying aquatic species? Example Lake Honnedaga .
16. How does acidification effect trees? Consider nutrient uptake, aluminum, leaching, illuviation, eluviation, prolonged exposure & weakening …
17. What are macroinvertebrates & how might they be used to indicate acid levels and other pollutant in water?
18. Potential solutions to acidification in the U.S.. Emissions Trading, National Atmospheric Deposition Program ,Acid Rain Program, National Ambient Air Quality Standards (trends in each).
19. Nuclear energy trends. Why have plants closed down? Number of plants; new reactors; sources of electricity production; greatest production by state.
20. Nuclear Power Concerns – Case Studies. Implication for today based on lessons from Three Mile Island & Shoreham plants.
21. Chernobyl: meltdown, spread, areas impacted, cleanup, consequences.

Exam II Review For Environmental Issues

Terms and Discussion Topics to Know From Your Text:

Chapter 13 – Central Case Study, Science Behind the Story, layers of the atmosphere, convective circulation, Hadley cells, Coriolis effect, primary and secondary pollutants, industrial vs. photochemical smog, Montreal Protocol, CFCs, indoor air pollution, World Health Organization,; From "Testing Your Comprehension" know questions: 3, 5, 6, 9, 10.

Chapter 14 - Central Case Study, Science Behind the Story, primary greenhouse gases, Milankovitch cycles, why climate varies naturally, El Niño and La Niña, Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report, effects of climate change, albedo, Kyoto Protocol, fee-and-dividend; From "Testing Your Comprehension" know questions: 6, 7, 8.

Chapter 15 – Central Case Study, Science Behind the Story, The Science Behind the Story, anaerobic, how fossil fuels are created, top producer and consumers of coal, oil, nuclear, and natural gas, Reserves/Production ratio (R/P), Hubbert's peak, impacts of fossil fuel use, nuclear fission, cogeneration, dilemmas that slow nuclear growth; Testing Your Comprehension" know questions:1, 2, 5, 6, 7, 8, 10.

Chapter 16– Central Case Study, Science Behind the Story, The Science Behind the Story, World total energy supply, world total electricity production, US energy from renewable resources, biomass, sources of biomass, passive and active solar, photovoltaic (PV) cells, states with highest wind generating capacity, ocean thermal energy conversion (OTEC), electrolysis, hydrogen benefits; Testing Your Comprehension" know questions: 2, 3, 4, 5, 8, 10.

Questions on the exam will come directly from your readings. Approximately 20% of the exam will be from the readings. The questions could be on a subject discussed or not discussed in class. This is to guarantee that you are reading. When studying class readings for the exam focus on major conclusions/points, bold terms, and questions from "Testing Your Comprehension". I will not nitpick and ask date, statistical, overly specific…type questions. Several questions will come directly from your Homework Assignments.

Exam III Review: Environmental Issues

Completed readings

Text:

Chapters, 9, 4, 8, 12

Article:

Dead Zones: Oxygen-Starved Coastal Waters
ANWR, 1002 Area, Petroleum Assessment, 1998, Including Economic Analysis

Questions on the exam will come directly from your readings. Approximately 20% of the exam will be from the readings. The questions could be on a subject discussed or not discussed in class. This is to guarantee that you are reading. When studying class readings for the exam focus on major conclusions/points, bold terms, and questions from "Testing Your Comprehension". I will not nitpick and ask date, statistical, overly specific…type questions.

General Test Related Information

1. Study examples; lecture and text terms; case studies; questions posed during class, major readings concepts.
2. Bring pencils.
3. Any information printed on the PowerPoint overhead is fair game.
4. Any information written on the board may be on the exam.
5. Class discussion questions may be on the exam.
6. Information not printed in the very brief PowerPoint outline, such as the definition of a term or an expanded discussion on a specific topic, may be on the exam.
7. I do ask questions which go beyond definitions - questions that make you link several concepts. "Concept understanding" type questions are commonly asked.
8. There will be 55 questions on the exam. Each question will be worth 1point.
9. If you have not been coming to class, I do not expect you to do well, as I intentionally design questions that are couched in class lectures and discussions – study hard and good luck.

Test 3 General Study Guide

1. Nuclear energy trends; Why have plants closed down? Total number of plants; new construction of reactors; the pros and cons of coal vs. nuclear; states with the most reactors.
2. Chernobyl: meltdown, spread, areas impacted, cleanup, consequences; lessons learned.
3. World installed wind capacity (by country); trends; US installed wind capacity (by state).
4. The demand for energy: U.S. and New York electric power sources.
5. Electricity generation and pollution (NY); New York's solutions to air pollution beyond the federal level: decrease demand, clean up dirty power plants, add clean technologies.
6. What environmental issues hinder wide scale use of wind? Know wind power myth and fact: wind power will cause brownouts or blackouts or power surges; noise created by wind turbines is excessive and can be heard at great distance, windmills cause high bird mortality, bat mortality, NIMBY, rare earth materials…
7. What is the worth of wilderness? Intrinsic values. Why we need nature.
8. Characteristics of: National Parks, Wilderness, National Monument, Wild and Scenic Rivers, National Wildlife Refuge – know the differences, level of protection, examples.
9. Grand Staircase-Escalante National Monument case study.
10. The troubled history of the National Wildlife Refuge system and how this history impacts Refuge policy today. Examples of problematic refuges.
11. Know the biomes of ANWR form north to south (tundra to boreal; common characteristic).
12. What are the major ecosystems of the tundra biome? Common characteristic?
13. Lichen moss biome/ecosystem. How do lichen & other species adapt to the cold Arctic?
14. Succession – know primary succession, secondary succession, pioneer species.
15. Why was ANWR created & how was it later divided (refuge…wilderness…); ANWR chronology of events as related to oil & drilling – from the National Petroleum Reserve-Alaska to ANILCA to Section 1002…; The controversy -Why we should/shouldn't drill
16. How has oil drilling technology improved? What is seismic surveying?
17. How much oil is in section 1002? What were the findings of the second EIS report regarding the quantity of oil. How much oil do we us in the US?; know oil quantity terms i.e. in-place resource & technologically recoverable.
18. Drilling activities & implications on vegetation (seismic surveys & permafrost melting) & wildlife (caribou, musk ox, polar bears…); How will the porcupine caribou herd be specifically harmed by drilling? Solution: Arctic Wilderness Bill.
19. Review your Hunt Union Pond lab. Know major water quality parameters; pH, conductivity, DO, nitrate, phosphate…sediment pollution and turbidity; what are the harmful effects of sediment pollution? Nutrients & limiting factors in freshwater.
20. Case study: Hypoxia in the Gulf of Mexico; harmful impacts of cultural eutrophication; know oligotrophic, eutrophic, hypoxic, & anoxic; inorganic nutrient loading.
21. Comparative Evaluation of Fishery Ecosystems Response to > Nutrient Loading (pelagic, demersal, benthic ecosystems.
22. Stratification and seasonality within the hypoxic zone of the Gulf of Mexico; Nitrogen inputs into the Mississippi River basin; solutions to hypoxia.
23. Know all terms, questions, policies, & case studies. Good Luck!

Exam III Review For Environmental Issues

Terms and Discussion Topics to Know From Your Text:

Chapter 9 – Central Case Study, Science Behind the Story, ecological functions of forests, results of the *Global Forest Resources Assessment* report, Areas of uncut forest in the US, primary and secondary forests, maximum sustained yield, ecosystem-based management, adaptive management, private vs. public timber harvest, timber harvest methods, National Forest Management Act, salvage logging, sustainable forests certification, public parks, reserves, refuges, wilderness area, land trusts, paper parks, biosphere reserve, world heritage sites, "peace parks", edge effects, SLOSS dilemma; From "Testing Your Comprehension" know questions - 1, 3, 4, 6, 8, 9, 10

Chapter 4 – Central Case Study, Science Behind the Story, competition, (intra and inter specific), resource partitioning, parasitism, community, mutualism, symbiosis, producers, consumers, detritivores and decomposers, varying trophic levels, benthic, littoral, keystone species, trophic cascade, succession, (primary and secondary), pioneer species, climax community, phase shift, temperate deciduous forest, temperate grassland, temperate rainforest, tropical rainforest, tropical dry forest, savanna, desert, tundra, boreal forest, chaparral, climograph (not climatograph); Testing Your Comprehension" know questions – 2, 3, 4, 6, 7, 9.

Chapter 8 – Central Case Study, Science Behind the Story, species diversity, ecosystem diversity, genetic diversity, evenness, species richness, extirpation, background rate of extinction, Red List, "Living Planet Index", causes of biodiversity loss, biophilia, Endangerd Species Act, habitat conservation plans,, CITES, endemic, community based conservation; Testing Your Comprehension" know questions – 1, 2, 6, 7, 9, 10

Chapter 12 - Central Case Study, Science Behind the Story, confined and unconfined aquifer, riparian, littoral zone, benthic zone, lemnetic zone, profundal zone, pelagi, thermohaline circulation, photic zone , continental shelf, slope and rise, El Niño-Southern Oscillation, La Niña and El Niño, Ogallala aquifer, water supplies (households, agriculture and industry), consumptive and non-consumptive use, water mining, nutrient pollution and other types of water pollution, red tides, effluent, Marine Protected Areas; Testing Your Comprehension" know questions – 1, 3, 4, 5, 6, 8, 9.

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