Exam II will be based on information in the following questions and in-class team assignments. Sources for the answers include:
--Hackett chapters 6 thru 10
--lectures & lesson handouts since Exam I (Lesson 5–Hackett 6; Lesson 6–Hackett 7, 8, 9; Lesson 7–Hackett 10)
--Homework assignments since the last exam.
Exam questions will be drawn only from these sources with the following exception: as will be seen below, 2 or 3 questions are reproduced from material for Exam I. Exam questions may be reproduced as they are shown here, or they may be revised (multiple choice questions may be re-phrased as short answer questions, or short answer questions as multiple questions, or multiple choice questions may be re-stated to focus on another aspect of the same question).

The exam will be entirely in class 9 Mar, and composed of multiple choice, short answer, fill in the blank, and possibly problems and short essay.

I. MULTIPLE CHOICE: Circle the best answer.

1. _______________ is the measurable probability of an event occurring and the significance of the consequence of the occurrence.
   a. Irreversibillity
   b. Risk
   c. Uncertainty
   d. Certainty
   e. none of the above

2. The likelihood that some event or action will or will not occur is indefinite or not measurable is known as _______________.
   a. Irreversibillity
   b. Risk
   c. Uncertainty
   d. Certainty
   e. none of the above

3. According to the risk perception model discussed in class, the desire for regulation tends to increase as risk is _______________ known and _______________ severe.
   a. more, more
   b. more, less
   c. less, less
   d. less, more
   e. none of the above
4. The function of greenhouse gases is to
   a. filter solar energy, limiting infrared energy radiated back into space
   b. filter pollution
   c. create hydrogen which may be a future alternative energy
   d. help commercial greenhouses function properly
   e. none of the above

5. According to Sanders, what most sides seem to agree on in the debate on global warming is:
   a. only human activity is causing it
   b. it is a “great hoax”
   c. it is at least a natural and cyclical process
   d. human activity is worsening the natural and cyclical process
   e. all of the above
   f. a, c, d
   g. none of the above

6. According to lecture notes, global warming may have some benefits for agriculture, including:
   a. enhanced CO$_2$ assimilation
   b. longer growing seasons
   c. increased precipitation
   d. faster growth, shorter growing periods, shortened lifecycle
   e. more frequent & severe droughts
   f. increased flooding & salinization
   g. all of the above
   h. a, b, c, d
   i. a, b, c
   j. d, e, f
   k. no; there are no benefits for agriculture from global warming

7. According to lecture notes, global warming may have some costs for agriculture:
   a. enhanced CO$_2$ assimilation
   b. longer growing seasons
   c. increased precipitation
   d. faster growth, shorter growing periods, shortened lifecycle
   e. more frequent & severe droughts
   f. increased flooding & salinization
   g. all of the above
   h. a, b, c, d
   i. a, b, c
   j. d, e, f
   k. no; there are no costs for agriculture from global warming
8. Lecture notes suggest that global climate change impacts to agriculture would be distributed geographically
   a. evenly, with all countries seeing increases in agricultural production
   b. evenly, with all countries seeing decreases in agricultural production
   c. unevenly, with countries such as Japan seeing increases, others such as the US seeing varied impacts, and still others such as Southeast Asia seeing decreases in agricultural production
   d. none of the above

9. Lecture notes suggest that potential climate change effects on US agriculture include(s)
   a. reduced yield of some crops
   b. heat stress-related crop losses
   c. increased crop and livestock risk from instability resulting from variable precipitation
   d. increases in pests and diseases in plants and livestock
   e. increases in weeds and invasive species
   f. shifts in optimal production centers
   g. all of the above
   h. none of the above

10. The trade-offs in the human time span in responding to global warming include:
    a. if worst-cases are true and nothing is done, the resulting impacts are generally irreversible.
    b. if predictions are not true but precautionary actions are taken, impacts are reversible but costly.
    c. in any case are likely trivial.
    d. in any case are very severe.
    e. all of the above
    f. both a & b
    g. none of the above

11. One source in the lecture notes suggests that global warming can be viewed as a(an) open access or common property problem, thus problems may be reduced by
    a. assigning property rights to individuals or countries on the right to pollute
    b. letting the polar ice cap melt
    c. ignoring the Kyoto accords
    d. establishing technologically solutions
    e. all of the above
    f. a & c
    g. none of the above

12. Lecture notes suggest that the mechanism that may alter global climate is the “Great
Ocean Conveyor”, its function is:
   a. to transport heat throughout the world’s oceans, affecting land temperatures as well.
   b. cold, salty, denser waters sink, pulling warm, salty Gulf Stream waters north
   c. fresh water from melting glaciers makes the conveyor pump work better
   d. all of the above
   e. a & b
   f. none of the above

13. Potential impacts from global warming/climate change, according to lecture notes, include:
   a. more violent weather locally
   b. summer pollution may worsen
   c. coastal areas inundated
   d. habitat for fish/birds harmed
   e. increase in communicable diseases & pests for animals, plants and humans
   f. ocean damage that threatens sources of many medicines
   g. political and military instability
   h. all of the above
   i. none of the above

14. The climate debate includes whether the earth will warm or cool significantly; this is related to how the ocean conveyor works; either model is likely to bring
   a. more weather volatility and changes in local weather patterns
   b. a new ice age
   c. better times for agriculture
   d. more certainty in weather patterns
   e. all of the above
   f. none of the above

15. Oklahoma farmers who have farmed the past 20 years are likely to assume that normal weather in Oklahoma brings
   a. precipitation.
   b. drought
   c. volatile precipitation patterns
   d. stable temperatures
   e. all of the above
   f. none of the above
16. Just as climate change affects agriculture, agriculture also impacts climate change by contributing to greenhouse emissions, resulting from
   a. deforestation
   b. biomass burning
   c. ruminant animal production
   d. elimination of wetlands
   e. all of the above
   f. none of the above

17. ______________________ can reduce emissions and take CO₂ out of the atmosphere by storing in terrestrial, oceanic or freshwater aquatic ecosystems.
   a. Moldboard plowing
   b. SUVs
   c. Carbon sequestration
   d. Ocean mining
   e. Aquifer discharges
   f. all of the above
   g. none of the above

18. Agriculture can accomplish the answer to 17 above by
   a. no-tillage farming
   b. tree production
   c. wetlands protection and restoration
   d. increasing animal production
   e. a, b, c
   f. all of the above
   g. none of the above

19. Lecture notes suggest that a public policy response to climate change is more appropriate if
   a. property rights are not clear
   b. inefficient markets exist
   c. externalities are present
   d. all of the above
   e. none of the above

20. Global warming is caused by ________________, which filter solar energy, limiting infrared energy radiated back into space.
   a. free markets
   b. greenhouse gases
   c. ethanol gases
   d. developing countries
   e. none of the above
21. The major contributor of greenhouse gases is (are)
   a. the US.
   b. China.
   c. India.
   d. Japan
   e. developing countries.
   f. none of the above.

22. Which statement(s) about benefit/cost analysis (BCA) is(are) not true?
   a. BCA provides a method to compare an array of alternative public policy choices.
   b. “Apples & oranges” must be measured by the common denominator of money.
   c. BCA requires time and resources to conduct and evaluate.
   d. If benefits are greater than costs for all alternatives, they are all equally preferred.
   e. all of the above
   f. b & d are not true
   g. c & d are not true
   h. none of the above

23. When selecting a discount rate to develop present values of benefits and costs over time, one needs to realize that:
   a. a higher rate lowers the future value of benefits and costs.
   b. a lower rate lowers the future value of benefits and costs.
   c. the process tends to undermine policies with large up front costs when benefits are realized in later future years.
   d. the process tends to undermine policies with large up front benefits when costs are realized in later future years.
   e. both a & c
   f. both b & d
   g. none of the above

24. An estimation of a marginal damage function requires information about
   a. expected costs and benefits associated with a project
   b. physical effects associated with incremental increases in pollution, dose-response relationships
   c. the appropriate discount rate.
   d. All of the above.
25. Marketable pollution allowances are an alternative market mechanism to pollution control. Forms of marketable pollution permits include:
   a. individual transferable quotas.
   b. marketable development rights.
   c. Pigouvian permits.
   d. Both (a) and (b).
   e. None of the above.

26. Pollution subsidies are payments per unit of pollution reduced. Recent studies have suggested that pollution subsidies
   a. change incentives for firm entrance.
   b. result in a more equitable distribution of the pollution reduction burden.
   c. are more efficient than deposit-refund approaches to rewarding recycling.
   d. are more feasible than other political alternatives.

27. A marginal damage function represents
   a. the costs associated with reducing pollution to a lower level.
   b. the increase in damage that results from an increase in the level of pollution.
   c. the opportunity costs associated with production of a good or service
   d. the costs of labor, capital and energy needed to lessen the emission of pollution.
   e. Both (a) and (d).

28. A marginal abatement cost function represents
   a. The costs associated with reducing pollution to a lower level.
   b. The increase in damage that results from an increase in the level of pollution.
   c. The opportunity costs associated with production of a good or service
   d. The costs of labor, capital and energy needed to lessen the emission of pollution.
   e. Both (a) and (d).

29. The optimal level of pollution abatement across two or more firms is
   a. a mandated reduction of equal quantities by each firm
   b. A reduction of emission levels by each firm to the point where marginal abatement costs are equal across firms.
   c. a reduction of emission levels by each firm to the point where emission levels are not equal.
   d. None of the above.
30. _____________________ is(are) example(s) of the concept of economic incentives.
   a. Property rights
   b. Quota trading
   c. Taxes
   d. Subsidies
   e. Bottle deposits
   f. Liability systems
   g. All of the above
   h. (B) & (D) only
   i. None of the above

31. The _____________________ strengths include it can measure nonmarket values and get citizen preferences, & weaknesses include monetary responses are hypothetical and it may introduce biases that distort reality.
   a. travel cost method
   b. Coase method
   c. hedonic pricing method
   d. contingent valuation method
   e. None of the above.

32. When the consumer reserves the right to use the resource in the future this is called:
   a. existence value
   b. use value
   c. altruistic value
   d. option value
   e. none of the above

33. Alternatives to BCA include:
   a. public vote
   b. the powerful decide
   c. noneconomic decision rule(s)
   d. all of the above
   e. both a & b
   f. none of the above

34. Sanders noted that market failure inevitably leads to the
   a. perfect allocation of resources.
   b. no need for government intervention.
   c. protective response.
   d. Good Samaritan effect.
   e. both a & b
   f. both c & d
   g. none of the above.

35. Sanders discussed the institutional mechanisms that affect the relationships of
individuals and the political economy of natural resources and environmental management, including:

a. political institutions affecting social and economic institutions
b. social institutions affecting political and economic institutions
c. economic institutions affecting political and social institutions
d. all of the above
e. both a & b
f. both b & c
g. none of the above

36. The ____________________________ is used to evaluate bids into the current Conservation Reserve Program.
   a. Environmental Benefit Index
   b. erodibility index
   c. salinity cross index
   d. benefit/cost ratio
   e. all of the above
   f. none of the above

37. The political economy of environmental and natural resource issues involves theories and concepts that treat systems as integrated relationships of ____________ institutions.
   a. economic
   b. political
   c. social
   d. ethical
   e. All of the above
   f. (a), (b) & (c)

38. The social contract with agriculture in the US is a way of viewing the political economy of agriculture and the environment. Recent legislative categories/acts to consider include:
   a. 1985 farm act
   b. 1990 farm act
   c. 1996 farm act
   d. pesticide regulation
   e. All of the above
   f. (a), (b) & (c) only
   g. None of the above.
39. The ______________________ seeks to keep over 35 million acres of environmentally sensitive land out of production and protected nationwide, while paying contracted Oklahoma producers _______ per year on average in 2004; the __________________ is a competitive-bid, cost-share program which provides technical assistance & _________________.
   a. EQIP, $45; CRP, incentive payments.
   b. CRP, $32; EQIP, incentive payments.
   c. CFO, $30; EQIP, wetlands protection.
   d. WRP, $50; CRP, livestock assistance.
   e. None of the above.

40. Rent-seeking in relation to farm sector groups & individuals is:
   a. when increasing demand leads to less fertile/more marginal land being brought into production.
   b. tenants search for the best rent in the market.
   c. the actual payments by tenants are sought by owners of other similar land.
   d. activity to influence the political process to get favorable outcomes or avoid unfavorable results.

41. ________________________ systems provide an incentive for polluting firms to self-monitor and has(have) the benefit(s) of
   ____________________________________________.
   a. Incentive regulation; raising government revenue through taxes.
   b. Command & control; letting firms do what they think is best for the environment.
   c. Incentive enforcement; reducing government cost & providing firms more flexibility.
   d. Quota trading systems; deterrence and easing new firm entry into the market.
   e. All of the above.
   f. None of the above.

42. The 1990 _________________________ is an example of an incentive enforcement system, calling for ____________ federal court time and expense.
   a. Clean Air Act & Amendments, less.
   b. Clean Air Act & Amendments, more.
   c. Endangered Species Act, less.
   d. Endangered Species Act, more.
   e. Both (a) & (c).
   f. None of the above.
43. A profit-maximizing firm might voluntarily over-comply with environmental regulations
   a. to prevent more stringent regulations.
   b. to enhance its image.
   c. to produce pollution allowances that could be traded.
   d. to save money when reducing waste actually does so.
   e. All of the above
   f. (a) & (d) only
   g. None of the above

44. The scope of citizen lawsuits enabled under the 1990 CAA amendments include(s):
   a. sue for cash penalties.
   b. Sue to force compliance.
   c. Both (a) & (b)
   d. None of the above

45. The _________________ theory suggests that politicians are self-interested maximizers who select policies that best serve their own personal interests.
   a. Public Interest
   b. Public Choice
   c. Capture
   d. Rent-seeking
   e. None of the above

46. The “taking” concept refers to
   a. the destruction of habitat for threatened and endangered species.
   b. the government’s taking of private property rights with restrictive regulations.
   c. the creel catch limit on limited entry fisheries.
   d. Both (a) and (b).
   e. none of the above.

47. Market reputation is most likely to induce deterrence in an environmental context when which of the following are true?
   a. When a large number of citizens care about the environment, and acceptable substitute products are available.
   b. The costs of organizing environmental boycotts are low.
   c. Companies place a high value on future business.
   d. All of the above.
   e. none of the above.

48. Choose the entry below that is NOT an enforcement tool available to the EPA.
   a. Impose administrative fines.
   b. Inspect firms.
   c. Request that firms provide data.
   d. Impose criminal penalties without the involvement of a federal judge.
49. The primary impact of urbanization, according to the Land Issues Team, is:
   a. decreased amount of food and fiber production
   b. increased open space
   c. improved land quality
   d. sparser population
   e. all of the above are key impacts

50. Federal public lands are primarily managed by
   a. Forest Service
   b. BLM
   c. CIA
   d. Fish & Wildlife
   e. EPA
   f. National Park Service
   g. all of the above
   i. all but c
   j. a, b, d, f
   k. none of the above

51. According to Sanders, the ___________ method could be used to examine the impact of building a new airport on neighboring home values.
   a. travel cost
   b. market
   c. hedonic
   d. utilitarian
   e. any of the above
   f. none of the above

52. Sanders’ research on the value of wild and scenic rivers in Colorado suggested that ___________ value effectively captures the value.
   a. market
   b. recreation use
   c. option
   d. existence
   e. bequest
   f. all of the above
   g. b, c, d, e
   h. none of the above
53. According to lecture notes, market failure historically leads to ___________________________, examples of which include government intervention and the private sector seeking advantage or market power.
   a. the protective response
   b. global warming
   c. success of minorities
   d. environmental justice
   e. all of the above
   f. none of the above

54. Public policy tools for natural resource management include
   a. regulation
   b. conservation compliance
   c. easement payments
   d. conservation subsidies
   e. cost-sharing
   f. incentive payments
   g. trading, banking, bonding
   h. education and research
   i. all of the above
   j. none of the above

55. ___________________ relates to dredge and fill operations in land and lake management.
   a. Section 404 of the Clean Water Act
   b. The Clean Air Act
   c. The NRDC lawsuit
   d. CREP
   e. none of the above

56. ___________________ relates to 21 threatened and endangered species and atrazine use.
   a. Section 404 of the Clean Water Act
   b. The Clean Air Act
   c. The NRDC lawsuit
   d. CREP
   e. none of the above

57. The 1985 farm act initiated conservation programs such as
   a. CRP
   b. conservation compliance
   c. sodbuster
   d. swampbuster
   e. all of the above
   f. none of the above
58. The 1990 farm act included conservation programs such as
   a. renewing the CRP
   b. WRP
   c. WQIP
   d. pesticide users’ regulations
   e. continuous CRP
   f. all of the above
   g. none of the above

59. The 1996 farm act included conservation programs such as
   a. a new CRP
   b. EQIP
   c. CFO
   d. all of the above
   e. none of the above

60. The philosophy of the conservation programs in the current farm act was to
   a. let the market manage natural resources in agriculture
   b. shifting toward working farmland
   c. scaling back all conservation programs
   d. shifting to nonfarm land
   e. all of the above
   f. none of the above

61. Most of the CRP land is located in the __________ in the US, and in ________ OK.
   a. Great Plains; West
   b. West; Eastern
   c. South; Southeast
   d. Northeast; Northeast
   e. none of the above

62. Benefits of wetlands include
   a. floodwater storage
   b. trap for nutrients and sediment
   c. habitat
   d. buffer shorelines
   e. recreation
   f. timber production and livestock grazing
   g. all of the above
   h. none of the above
63. The energy title of the current farm act provides support for
   a. fossil fuels
   b. biobased fuels
   c. hydrogen
   d. water power
   e. nuclear power
   f. all of the above
   g. none of the above

64. Other energy title provisions call for
   a. bio-refinery grants
   b. bio-diesel fuel education program
   c. micro-farm use of nuclear power
   d. petroleum exploration in ANWR
   e. all of the above
   f. a & b
   g. none of the above

65. Forest Public Land policy in the US has evolved since
   a. Gifford Pinchot suggested federal involvement in the late 1880s.
   b. the 1891 Forest Reserve Act
   c. the 1960 Multiple Use and Sustainable Yield Act
   d. both a & b
   e. none of the above

66. The Endangered Species Act calls for
   a. listing species based solely on biological considerations
   b. listing species based on economic factors
   c. taking of private property rights, which the courts have declared unconstitutional
   d. all of the above
   e. none of the above

67. EPA programs affecting agriculture, according to lecture notes, include
   a. CZMA
   b. SDWA
   c. Compehensive State Ground Water Protection Program
   d. the 1985 farm act
   e. the 1996 farm act
   f. The Patriot Act
   g. all of the above
   h. a, b, c
   i. none of the above
II. SHORT ANSWER: Fill-in the-blank the best answer or respond as appropriate.

68. Briefly answer #2, p. 159, Hackett.

69. Discuss the major risks in climate change that agriculture faces, and some of the tools or options that are currently available.
Two projects for lakes from dams are being considered for Oklahoma: Sayre Lake and Ada Lake. Before discounting, the benefits are the same ($10000) for each project over 3 years; also, the costs are the same ($8000) for each. However, the stream of benefits and costs is different in the two projects. Evaluate the benefits and costs based on the data in the table below for a 3-year project life for each lake. Using net present value (NPV), make a recommendation on the preferred project. Show your work. (5 points total)

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a. [2 points]

NPV (Sayre) =

b. [2 points]

NPV (Ada) =

c. Which lake project, if any, do you recommend based on your evaluation (1 point)?
You have been hired as a natural resource consultant for a project in Turkey. The Turkish government is planning the siting and construction of one or more multipurpose dams in Southeast Turkey estimated to cost $3 billion. Irrigated agriculture will be the primary engine of economic development in a very poor region of Turkey. The nomadic minority culture will be displaced, but nomads have opportunities to buy irrigated farmland at government-subsidized prices or work as farm laborers and settle in new villages or the nearby provincial capital. A forced land redistribution will take place, with large arid farms being traded for smaller irrigated farms that are more productive. No foreign capital will be used for development. Agricultural production will primarily be for export markets. The dam(s) will reduce water flow and quality to neighboring countries. The government will provide educational and technical assistance & no-interest loans for farmers, business, village infrastructure (schools, utilities, etc.) and roads. These expenses are included in the project cost above. Base your response on Hackett’s Ch. 6, class lecture & related in-class team exercise.

a. List the steps necessary to conduct an objective benefit-cost analysis (3 points).

b. Discuss the definition of BCA, the rationale for its use, and explain the concept of present discounted value (2 points).
c. Include an itemized list of 4 key benefits and 4 key costs (without numbers), and likely methods to measure these categories (8 points).

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72. Sketch a marginal benefits-marginal costs economic graph of global warming perceived as market failure and briefly explain. (6 points)
Congress is considering how to reduce air pollution by amending the Clean Air Act. A recent bill is calling for a $10 income tax credit per ton of particulate emissions reduced to firms that will install improved scrubbers on their smoke stacks. Use a graph of a hypothetical marginal damage function for harmful emissions and a marginal abatement cost function to reduce such pollution to support such a tax credit, assuming the proposed tax credit will provide for an approximate optimum. Label all appropriate points on the graph and briefly explain the graph.