FRANKLIN UNIVERSITY PROFICIENCY EXAM (FUPE)
STUDY GUIDE

Course Title:	***Environmental Science (SCIE 131)***
Recommended Textbook(s):	Biosphere 2000, Protecting our Global Environment, by Kaufmann and Franz
Number & Type of Questions:	74 Multiple Choice, 28 Short Answer & 15 Matching
Permitted Materials:	**Pencil**
Time Limit:	6 hours.
Minimum Passing Score:	80%

The questions listed below are designed to aid the student in preparation for the FUPE in Environmental Science. These questions are to be treated **AS A GUIDE** – which means that they may or may not appear on the examination and other questions, not found in this document may appear. The document serves **ONLY** as a **GUIDE** – not the total base of information requested on the test. Read over the Chapter Summary of each chapter and if material is unfamiliar – read the WHOLE chapter CAREFULLY. Readings up through chapter 15 are **IMEPERRATIVE**; however, overviews of the material through Chapter 20 would be useful.

SAMPE STUDY QUESTIONS

1. What is the BIOSPERE and what delineates it's limits?

2. What is the difference between *adaptation* and *evolution*?

3. Explain what is meant by the statement "the solution to ANY environmental problem consists of two components".

4. Explain what the underlying tenants of FRONTIER ETHICS are and why man now realizes that he can no longer live according to them.

5. Explain at least two (2) of the three (3) major causes of Environmental Problems today and HOW they are causing problems.

6. Identify two (2) advantages and two (2) disadvantages in using ENVIRONMENTAL PROBLEM SOLVING as a method to correct an Environmental Problem.

7. Identify and explain three (3) characteristics which are employed in good environmental management.

8. Differentiate between material and immaterial culture.

9. Discuss the impact of various human cultures, attitudes, values, and beliefs on the environment.

10. Compare and contrast Science, Ecology, and Environmental Science.

11. Identify the components of the Scientific Method.

12. Reflect on an environmental problem and recommend scientific research that could help alleviate the problem.

13. Define ecosystem. List two different ecosystems and compare and contrast them.

14. Differentiate between biotic and abiotic components of an ecosystem.

15. Discuss the ecosystem structure for a current environmental problem.

16. Trace the flow of energy through a specific ecosystem. Identify the system and use specific examples.

17. List and describe the first and second Laws of Thermodynamics.

18. Explain how the Laws of Thermodynamics affect the population of an organism at the top of the energy pyramid. Describe how energy and matter flow through an ecosystem.

19. Identify the input and loss of energy in an energy pyramid.

20. Identify natural and human-caused factors that degrade ecosystems.

21. Explain how conservation and restoration ecology could be used to minimize damage caused to a given ecosystem.

22. Explain, with an example of your own, how an ecosystem remains at a dynamic equilibrium although it is perturbed from time to time.

23. Define and provide two (2) examples of biotic potential and environmental resistence as it applies to a particular population.

24. What is the relationship that is argued between the stability of an ecosystem and its diversity?

25. Explain the difference between point and non-point source pollution and solutions in the treatment of the respective problems each causes.

26. Identify the two (2) common forms of ecosystem degradation.

27. Identify two (2) purposes for which humans degrade the environment AND explain what the "trade offs" are between the people and the environment in EACH situation.

28. Explain the sequence of events which can lead to desertification in a semiarid region of the world (a man-made sequence or a natural sequence).

29. Suggest a rational reason that the harvest of Temporate Forest (which occur at 3 to 8 times the rate of Tropical Forests) has not generated the public outcry equal to that of the Tropical Rainforest?

30. Explain the value to the consumers of eliminating unneeded trophic levels in reaching them.

31. Explain the difference between biomagnification and bioaccumulation.

32. In the discussion of endangered species, threatened species, and extinction, what is the importance of a specie's CRITICAL LEVEL?

33. Differentiate between endangered species and threatened species.
    33 a. How do species become endangered or threatened?

34. Explain the importance of the evolution of the chlorophyll molecule to life on Earth.

35. Explain the importance of decomposers to all life forms on the planet.

36. Explain the value and the shortcomings of using computer models in assessing environmental problems and possible "correction".

37. The introduction of exotic specie can and does happen quite subtly in many parts of the world where they have a devastating effect on species man is dependent. What makes some exotics dangerous and others not so?

38. Discuss the uses of the vital statistics which are obtained in a Demographic Study of a population.

39. Identify at least three (3) activities which can influence the size of a population in any defined area.

40. What are the differences between Disturbance Ecology, Restoration Ecology and Conservation Ecology?

41. What are the respective benefits and detriments each for Conservation Programs and Restoration Programs.

42. Identify a few ways that the human population could be considered an attribute and a few ways that the human population could be considered a detriment to the survival of the earth.

43. What is meant by zero population growth and what are the perceived values of reaching such a condition?

44. What might be a cause for the fact that human doubling time has decreased for every population of humans across the world?

45. Explain why reducing the birthrate of the world by 50% for 200 years would still contribute to population growth.
    45a. Discuss the differences regarding population growth rates between 1st and 3rd world countries.

46. Explain the impact of urbanization on population growth rates and lifestyles.

47. Relate women's status in the community and higher education to her participation in family matters and civic activities.

48. Characterize the lifestyle, population size and impact on the environment of the Hunter-Gatherers; Agricultural People; The Industrial Society; and the Advanced Industrial Societies.

49. Indicate what demographic changes occurred as humans changed from Hunter-Gathers on up the ladder.

50. Explain how the Pronatalists and Antinatalists views of population differ.

51. Explain both the functions of Family Planning and HOW it differs from Contraception.

52. Identify one or two "birth control systems" and indicate why there are failure rates for all of them.

53. Identify the basic food types and their importance in the life of humans and other organisms.

54. What are the benefits and possible detriments of the development of a "Super Species" of the needed food crop?
    54a. What constitutes a healthy diet for humans?

55. Identify the difference between undernourishment and malnourishment.

56. Explain how hunger relates to environmental degradation; poverty; political activity and economic conditions of the people.

57. Identify some steps which might be taken to improve the world's food supply.

58. What values do biotechnology and techniques such as marine and freshwater aquaculture have in producing foods for humans? What are the consequences of these systems of food production for wildlife?

59. What is the difference between a renewable and a nonrenewable resource?
    59a. What are the most common sources of renewable and nonrenewable energy?

60. What is meant by "energy efficiency" and how does that relate to "life cycle costs" for the survivability of life in earth's ecosystems?
    60a. What are the major fossil fuels being used today? How are they collected?

61. What are some of the issues related to the use of fossil fuels or nuclear energy on the population socially, health wise and economically?

62. What are some of the future possibilities for energy use by man and the impact theses uses might have on his lifestyle and the lives of the other things on the planet?

63. Know the availability of and extraction methods used and combustion of fossil fuels including their byproducts and possible pollutants.

64. Why is oil the most developed and preferred fossil fuel?

65. What will the future hold for fossil fuels as a dependable source of energy?

66. What is meant by an "alternative source of energy" and WHY does nuclear energy not really qualify as "alternative"?

67. What are the pros and cons surrounding using alternative energies?

68. What other steps must be taken besides looking for alternate energy sources IF the planet is to have enough energy for all who wish it?

69. Explain how the atmosphere is a protector of life on the planet.
    69a. What is global warming? What is the greenhouse effect? How are they different?

70. Identify the causes and ramifications of the thinning of the ozone and Global Warming.

71. What are the positives and negatives of the Greenhouse Effect?
    71a. What causes acid rain?

72. What is the concern about Acid Deposition?

73. What are some of the "indoor toxins" and what are their sources?

74. Describe the composition of the air and layers of the earth's atmosphere.

75. Discuss the changes occurring in the atmosphere as a result of air pollution, and the sources and effects of those changes.

76. Specify the factors that separate primary from secondary sources of pollution.

77. Describe an ecological catastrophe that compromised or destroyed a water supply.

78. What is sustainable agriculture?

79. Identify the components of fertile soil. How do you promote a healthy and productive soil?

80. Illustrate the complex links between air, water, and soil and how damage to one element can affect others.

81. Explain your worldview toward environmental concerns. How has it been shaped by religion, ethics, and culture?

82. Discuss the difficulties inherent in globally enforcing environmental law.

83. Define environmental law or legislation.

Suggested Study Activities:

1. Obtain a copy of the text. Skim the text and make use of the list of **Terms** and the **Review Questions** at the end of each chapter as a guide.

2. Feel free to e-mail Dr. Kody Kuehnl (lead faculty) at kuehnlk@franklin.edu if you have any questions about the information included in this study quide.