

BioE 100 Mid Term Exam 2
March 22, 2012

Name _____ Student ID _____

TRUE OR FALSE: ETHICAL THEORY (20 POINTS)

1. _____ The primary ethical issue in regards living human donors is avoiding coercion for organs
2. _____ Biosphere 2 demonstrated that we have a good understanding of ecosystems and environment.
3. _____ Health care is a debate about rationing of insurance against health catastrophes.
4. _____ Potentially beneficial technologies with high risk never improve and will always be unethical
5. _____ Nuclear energy is both an alternative as well as renewable energy source
6. _____. Tuskegee syphilis study led to codification of ethics in human research via the Belmont Report.
7. _____. Ethicists support the use of the 5R's in animal research.
8. _____. Informed consent is paramount for competent patients volunteering for experimental research
9. _____. Jeremy Bentham asked "The question is whether they (animals) can understand"
10. _____. In human research, justice ethics concerns the fair selection of human research subjects

MULTIPLE CHOICE: ETHICS IN PRACTICE (25 POINTS)

11. What ethical theory applies to the statement "Donated organs should be made available to patients on the basis of medical need and not on the basis of social status or other considerations."

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|-------------|-------------------------------|
| (a) justice | (c) double effect |
| (b) rights | (d) preference utilitarianism |

12. The American Veterinarian Medical Association that governs animal research supports

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|--------------------|-----------------------|
| (a) animal rights | (b) animal welfare |
| (c) Nuremberg Code | (d) none of the above |

13. The dominant ethical theory for those opposed to presumed consent for organ donation

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|-------------------------------|----------------------|
| (a) hedonistic utilitarianism | (c) prima facie duty |
| (b) rights | (d) beneficence |

14. Moral calculus based on "desire", "preferences", "intention", "understanding."

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|-------------------------------|-------------------------------|
| (a) rights ethics | (b) hedonistic utilitarianism |
| (c) preference utilitarianism | (d) none of the above |

15. Example of emerging energy-related technologies that will eventually become 0 risk

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|--------------------|--------------------------------------|
| (a) geoengineering | (c) carbon capture and sequestration |
| (b) wind power | (d) none of the above |

TECHNOLOGIES TOPICS: SHORT ANSWER (25 POINTS EACH)

16. Energy Technologies. The burning of fossil fuel (oil, coal, natural gas) accounts for about 75% of annual CO₂ emissions from human activities and 20% is caused by deforestation. However, with effort on emission reductions, we have a small window in which to avoid truly dangerous global warming and provide future generations with a sustainable world. *For both deep and shallow ecology state*

(a) whether they support sustainability of development or sustainability of the biosphere

(b) their supporting environmental ethical theories.

(c) example of an emissions reduction technology consistent with their ecological sustainability approach.

17. Scarce Medical Resources. Presumed consent for organ donation presumes that individuals will donate their organs as a default outcome after their death. Those who choose not to donate must make a legal effort to “opt out”. As an opponent of presumed consent, name 2 reasons and supporting ethical theories to convince your state senator to block the adoption of a presumed consent law.

ETHICAL CASE STUDIES (50 POINTS EACH)

18. Animal Experimentation. A researcher is planning to test a new analgesic medication for humans that may prove useful in relieving pain associated with severe burns. Previous research studies of the new analgesic tested on 100 mice were inconclusive, and the new experiment proposes to use two groups of 12 dogs each, an experimental group and a control group, in which all dogs will be shaved on the haunch, anesthetized, and burned with a flat iron over a 6” x 6” area. Both groups will receive antiseptic treatment for the burn, but only the experimental group will receive the pain medication under study. The researcher proposes to measure their degree of pain by touching the burn and recording the behavioral response, heart rate, and blood pressure. Does the proposed research protocol satisfy the “5 R’s”?

Name	Explanation
Replacement:	<p><i>The nature of the disease probably requires a vertebrate species (no lower order species, cell cultures, computer modeling). Mice first then dogs (not jumping to chimps for example) is satisfactory.</i></p> <p><i>Can question whether “lower moral worth” mammals can be found.</i></p> <p><i>Can question whether human experimentation is more appropriate since pain response is hard to analyze in non-verbal dogs.</i></p>
Reduction:	<p><i>It appears that reduction is satisfied, #dogs < #mice</i></p> <p><i>Can question whether 12 +12 control dogs is too many, but this alone does not address the case study without further info (you have not acquired the facts!)</i></p>
Refinement:	<p><i>Must question whether control group should receive pain medication that is more than just placebo, i.e. that the research be comparing pain medications.</i></p> <p><i>May accept that the control group must get placebo to better “measure” pain in non-verbal animals.</i></p>
Relevance:	<p><i>Severe burns treatment for pain passes relevance</i></p> <p><i>May be applied to humans and animals</i></p> <p><i>Other analgesics exist and relevance should be better stated as to why we need a new one.</i></p>
Redundancy:	<p><i>We do not really know about other studies,</i></p> <p><i>Or we can assume that if it is a new medication than it passes redundancy.</i></p>

19. Environmental Ethics. Human-induced global warming is primarily impacting poor developing countries that are experiencing droughts and diminishing water for food. Under the 1997 Kyoto Protocol and 2009 UN Climate Change Conference in Copenhagen, no real binding agreement has been reached on reducing global CO₂ emissions to avoid life threatening temperature rises above 2°C. One controversial emerging technology is geoengineering, i.e. direct manipulation of the Earth's climatic feedback systems such as the “Geritol” cure or “sunscreen” solution. Opponents argue that geoengineering is premature, with unforeseen environmental consequences, and does not curb the anthropomorphic causes of global warming. Proponents argue that such skepticism flies in the face of past technological achievements, economic advances relies on cheap and available fossil fuels- and that we are nearly out of time given the lack of GHG regulation. You now have acquired the facts, and you are given two alternatives: (1) recommend a large government research effort to bring geoengineering technologies forward rapidly for use in 2020, or (2) oppose geoengineering research in favor of current technologies combined with efforts to reduce fossil fuel consumption and CO₂ emissions. Define stakeholders, analyze alternatives, and state action based on better of the 2 alternatives.

Stakeholders:

(1) Support geoengineering

(2) Do NOT support geoengineering

Summarize course of action:

20. Human Experimentation. HIV/AIDS is the leading cause of death in Africa, with many thousands of new HIV infections occurring each day. The most effective treatment, antiretroviral medication such as AZT, is complicated to administer, can cause serious side effects, requires close medical monitoring, and is extremely costly. These methodological and economic barriers make it difficult for many of the poor to sustain a course of AZT treatment, and is not affordable for subsidy by African governments either, running the risk that AZT will lose its effectiveness over time. U.S. researchers working with Ugandan physicians wish to perform tests for abbreviated AZT treatments on pregnant Ugandan women to prevent HIV transfer from mother to infant *in utero*, and to test effectiveness using placebos as controls since most HIV+ patients receive no treatment. The current treatment for pregnant women in developed countries such as the US and France is the long course ACTC076 protocol. All of the above information is included in the informed consent document in the language of the Ugandan pregnant mother, and the Ugandan hospital facilities are of high standard to conduct the research. You are serving on the Ugandan hospital IRB where the research will take place, and will define the best course of action by applying the 4As to the HIV study in progress. You now have acquired the facts, and you are given two alternatives: (1) Discontinue the study and (2) Continue the study as planned. Complete final 2As for each, and state which is the better of the 2 alternatives. Propose and analyze (with final 2A's) a third alternative, and state why it is better than the other alternatives.

(1) Discontinue the study

(2) Continue the study:

(3) Continue the study after alteration:

