
print name

INSTRUCTIONS:

1. The *Natural Capitalism* Exam must be completed within the allocated time (*i.e.*, 6:30 - 7:30).
It is a closed book exam.
2. **Recall the material difference between e.g. (for example) and i.e. (that is).**
3. As each student finishes the *Natural Capitalism* Exam, that student will receive a *Natural Capitalism* Exam answer sheet and leave the exam room until after the end of the *Natural Capitalism* Exam (*i.e.*, 7:30, unless all students finish earlier: less likely than Memorization Exam).
4. Grades will be posted to BlackBoard no later than 5:00 PM Wednesday, July 14.
An email notice of the posting will be sent.
5. The *Natural Capitalism* Exam is worth 10% of the course grade.
The *Natural Capitalism* Exam has 35 questions graded as if there are 33.
Harmless errors are far more likely than non-harmless errors in this test design.
Any student may appeal the grading of *Natural Capitalism* Exam questions.
However, only if a student successfully appeals the ambiguity of AT LEAST THREE questions on the *Natural Capitalism* Exam will that student's exam grade change by the number of successful appeals in excess of two questions.
Appeals only affect the exam grades of those students that appeal.
Based on a statistical analysis of all students' answers, the instructor unilaterally may alter the grading of specific exam questions for all similarly situated students.
6. **All appeals** of *Natural Capitalism* Exam questions must be:
[6A] typed; [6B] signed by the student in three ways, typed name, handwritten signature, and typed social security number; [6C] in sequence, list, immediately following the signature, each of the questions, by number, being appealed; [6D] after the [6C] list, argue each question, one at a time; [6E] at the beginning of each question's appeal, identify two or more reasonable meanings that the question could have had; [6F] argue why one or more of the identified reasonable meanings is *as* appropriate or is *more* appropriate than the meaning used for the answer key answer; and [6G] personally handed to the instructor
no later than 6:00 PM on Monday, July 12.

QUESTIONS:

1. T F Routinely, markets accurately value the damage to an ecosystem.
2. T F Switching from the current focus of marketing a sale of goods to marketing of a cradle-to-cradle sale of services and flows from those goods would tend to align more closely a manufacturer's interests with the environment's interests.
3. T F Factor Ten efficiency is achieved when the same output is obtained from one-tenth the inputs.
4. T F The by-products of automobiles, whether internal combustion **or** hypercar, contribute to the Greenhouse Effect, **but** in different ways **and** magnitudes.
5. T F Oil is more likely to be **uncompetitive** at low prices before oil is **unavailable** at high prices.
6. T F Today, industrial production systems tend to optimize many related feedback loops, **but** typically ignore feedback loops of the environment.
7. T F Today, industrial production systems tend to generate substantial waste both internal to the production systems **and** external to the production systems.
8. T F If both a process **and** the measurement **and** control of that process is more local, then superior optimization of both that process **and** related process is more likely, **but not** a necessary outcome.
9. T F Today, industrial production designs often are linear, while nature is cyclic.
10. T F Biomimicry can inform both the design of specific manufacturing processes **as well as** inform the structure **and** function of the entire economy.

11. T F A building's design can both positively **and** negatively effect human behavior in organizations.
12. T F The whole is greater than the summation of its parts.
13. T F Efficiency tends to **not** be capitalized.
14. T F Design is applied foresight.
15. T F Optimizing components in isolation tends to pessimize the whole system.
16. T F Downstream savings offer the greatest leverage when seeking efficiency for a whole system.
17. T F *Muda* is any human activity that absorbs resources but creates **no** value.
18. T F Lean thinking urges competition against absolute perfection rather than competition against the relative standard of a market competitor.
19. T F As compared with direct management by government, price signals that arrive in a synchronized fashion relative to a system's needs can better organize complex system interactions **and** incite innovation.
20. T F Rarely is manufactured capital a true substitute for natural capital: thus, natural capital becomes a limiting factor.

21. T F Perverse subsidies encourage behavior detrimental to the process being subsidized.
22. T F Today, **neither** natural fibers **nor** manufactured fibers are produced in a sustainable manner.
23. T F Closing material loops can **unlock** opportunities both for reduction **and** recycling of inputs.
24. T F From a technological perspective, industrial agriculture has been very successful.
25. T F Farms, as natural systems, offer many opportunities to use the four forms of capital
(*i.e., human, financial, manufactured, **and** natural*)
of Natural Capitalism
as well as to use the four central strategies
(*i.e., radical resource productivity, biomimicry, service **and** flow economy, **and** investing in natural capital*)
of Natural Capitalism.
26. T F Water is a limiting factor for life on Earth.
27. T F The current manufactured systems for delivery **and** recovery of water contain multiple major forms of *muda*.
28. T F Human behavior has altered the Earth's climate by shifting some atmospheric related processes **and** by altering the volatility of some atmospheric related processes.
29. T F The presence **or** the absence of a stimuli (*e.g., price signal*) is less important than the stimulated system's ability to respond to the stimuli (*e.g., climate*) **and** thus to generate a change desired in that system.
30. T F The current array of market price signals **and** market decisions reflect implicit assumptions that the future is worthless **and** that the environment is **not** a relevant input.

31. T F Efficiency enhancing innovations are retarded by market barriers: including, **but not** limited to, decision makers that make decisions based upon **incomplete** information, **inaccurate** information, **and** **irrational** resistance to relevant information flows.
32. T F Often, the cause of a current problem is a prior, narrowly tailored, technological solution to a different problem, **and** that prior solution revealed previously **unknown or misunderstood** feed back loops.
33. T F Both natural systems and social systems provide both monetized resources **and** services **as well as** **nonmonetized** resources **and** services.
34. T F An observer of a complex system will see that system through the lens of the observer's paradigm; thus, an interdisciplinary approach tends to improve the accuracy of perception.
35. T F Businesses will earn greater long-term profits by sustaining the current focus on narrowly defined subsystem revenue streams rather than adopting a whole system focus.