

Review Sheet – Final Exam
HIST 282CS

The final exam will incorporate material from your readings, the lectures, and the quizzes. You should bring two blue books to the exam. No notes or books will be allowed.

Sample Identification

Vitalism	Alexander von Humboldt
William Whewell	Consilience of Induction
HMS <i>Beagle</i>	Alfred Russel Wallace
Charles Lyell	Sociobiology
Epigenetics	Jean Baptiste Lamarck
Reverend Thomas Malthus	Reductionism

Sample Essay Questions

When we use the term “laws of nature,” do we mean nature’s laws or laws that we ascribe to nature? How do the readings in *Science and Its Ways of Knowing* speak to this question?

Prometheus stole fire (reason) from Mt. Olympus and gave it to humans. His punishment was to be crucified and his liver eaten by birds everyday, only to re-grow during the night. (Note similarity with Adam’s eating of the fruit and his subsequent expulsion from the garden). What is the significance of the complete title of Mary Shelley’s classic novel?

What is the moral of Mary Shelley’s novel in terms of reductionism? (The “apt moral from my tale.”)

How did Linneaus use the norms of society in his taxonomy; how does this help us think about science? How does it help us analyze the relationship between science and society?

Thomas Malthus often is referred to as the “gloomy philosopher.” Why is this misleading?

What is natural selection? Describe this evolutionary mechanism concisely, using your own words. Explain the long neck of a giraffe.

What did Charles Lyell and Alexander von Humboldt bring to Darwin’s outlook? Why are they significant for the formulation of his theory of evolution through natural selection?

How does Darwin’s theory of evolution reflect the society in which he lived? Or, how do you explain the fact that not one but two British naturalists came up with the same theory at nearly the same time?

Darwin could not prove his theory through experiments or deductive reasoning. Rather, how did he argue for his theory in his final chapter “Recapitulation and Conclusion”?

What were the main objections to Darwin’s theory (in science and religion)? How were these debates resolved?

The Island of Dr. Moreau represents some of the difficulties Victorians had with the implications of Darwin’s theory. What are those difficulties?

Define eugenics and how its main proponents saw it as an applied science. What are positive and negative eugenics? What was wrong with the science?

How does David Quammen characterize Darwin’s religious views in *The Reluctant Mr. Darwin*? Is Darwin’s theory of natural selection compatible with religion—why or why not?

Is hierarchy in society inherited? Is there a God gene? How does the history of biology help us think about these question (and to think about biology in general)?

Compare and contrast *Frankenstein* and *The Island of Dr. Moreau*. What do they have to say about reductionism? About morality? How do they reflect specific historic events of their respective times (1818 and 1896)?

Explain the difference between Lamarckism and Darwinism.

What is CRISPR technology? Where does it fit into the reductionist framework discussed in class? What are the positives of CRISPR? What are some of the possible negative consequences?

Are humans still evolving? Where does culture take over from biology?

Darwin’s theory of evolution has been implemented in society at different times in different ways (think Social Darwinism and eugenics, for example). Explain how science is used to reinforce (or perhaps challenge) attitudes and beliefs that are prevalent at the time, using examples from class.

How does Lewontin relate research, money, and politics in *Biology as Ideology*? Use specific examples.

Give five examples of reductionism in science from the Enlightenment to the present day. Why has reductionism been such a powerful force in science?

How does the history of the Darwinian Revolution help us think about modern biology?

How do you think differently about modern biology after taking this course?