

**Final Examination Study Questions*****From Newton to Reid***

1. How are we to understand Newton's famous banishment of hypotheses from natural philosophy? Illustrate with examples from Newton's own work in optics and gravitation. What philosophical problematic did Newton thereby bequeath to later generations of philosophers of science?
2. What was Newton's "bucket" argument and how did Mach criticize the argument?
3. Summarize the argument between Leibniz and Newton's defenders, such as Clarke, over absolute versus relative or substantivalist versus relationalist views of space.
4. What are the main ingredients of Hume's empiricism? Discuss, in particular, the implications of Hume's epistemology for our understanding of the nature of scientific laws.
5. Contrast Hume's empiricism with Reid's common sense philosophy.
6. Outline Reid's views on the role of analogies in science.

***Kant and Kantianism***

7. Summarize the "incongruent counterparts" argument and explain its importance for Kant's doctrine of space.
8. Explain what Kant means by the claim that space is the necessary a priori form of outer intuition and time the necessary a priori form of inner intuition. How is Kant's doctrine of intuition embedded in his larger philosophical project? And in what way, mainly, does it represent a critique of Humean empiricism?
9. In the *Metaphysical Foundations of Natural Science*, Kant wrote, "I maintain . . . that in every special doctrine of nature only so much science proper can be found as there is mathematics in it." Explain what this means and give a sketch of Kant's project in this book.
10. Helmholtz's philosophy of science is sometimes described as "physiological Kantianism." What does that mean? Does Helmholtz's view rightly deserve the "Kantian" label?
11. Outline the central themes in the development of Marburg neo-Kantianism, paying special attention to the question of the role of intuition in scientific cognition.
12. Reflecting on Kant's core doctrine of the a priori, its legacy, and the various later neo-Kantianisms that we discussed this semester, describe and defend your own view of the viability and future prospects of Kantianism in the philosophy of science.

***From Comte through Maxwell***

13. What are the main features of Comte's version of positivism?
14. What did Comte mean by "social physics"? Why, in your opinion, do the social sciences seem to have, comparatively speaking, so little impact on the development of the philosophy of science in the nineteenth century, in spite of the huge importance of then new fields of study such as political economy?
15. Give a comparative and critical assessment of the views of Comte and Whewell on the relationship between history of science and philosophy of science.
16. Describe the way in which developments in science in the latter eighteenth and early nineteenth centuries served as a stimulus to the development of a richer inductive logic. What were the principal contributions to this history of thinkers like Herschel and Whewell?
17. Explain how Mill's radical empiricism differs from the empiricism of Hume and how Mill's view of induction differs from Whewell's.
18. Discuss Maxwell's understanding of the role of models in science.

***From Helmholtz to Mach***

19. What is the semiotic view of knowledge and scientific theory? Give a sketch of its development in the latter part of the nineteenth century, and briefly assess its strengths and weaknesses.
20. Discuss the political embedding of Helmholtz's philosophy of science.
21. What was main point at issue in the Lübeck debate and the larger argument between energeticists, such as Helm and Ostwald, and the defenders of atomism, such as Boltzmann?
22. Discuss the impact on philosophy of science and epistemology of work in psychophysics in the middle and later nineteenth century.
23. Summarize and critically assess Mach's view of the relationship between history of science and philosophy of science.
24. Describe the main features of Mach's "biologico-economical" view of science and compare this version of empiricism with the views of both Hume and Mill.
25. Which, in your opinion, is better: U2 or Radiohead?