

Study Questions
Philosophy of Science
Spring 2011
Exam 1

1. Explain the affinities and contrasts between science and philosophy and between science and metaphysics.
2. What is the principle of verification? How was the logical positivist's view of verification influenced by Hume's fork? Explain.
3. Explain Hume's distinction between impressions and ideas. What is the relevance of this distinction for the empiricist's view of how knowledge is acquired?
4. Why was Hume skeptical about "metaphysical knowledge"? Does the logical positivist, such as A. J. Ayer, agree or disagree? Why or why not?
5. Explain Ayer's distinction between weak and strong verification. Is this distinction tenable?
6. How did Rudolf Carnap attempt to separate science from metaphysics? Explain the role of what Carnap called 'C-Rules' for this attempt. Was he successful?
7. Explain one criticism of the logical positivist's principle of verification? Do you agree or disagree? Why or why not?
8. Explain the affinities and contrasts between A. J. Ayer's logical positivism and Karl Popper's criterion of falsifiability. Why does Popper think that scientific progress depends on falsifiability rather than verifiability? What are Popper's arguments against verifiability? Do you think Popper is correct?
9. Kuhn argued that Popper neglected what Kuhn calls "normal science." Does Popper have a reply to Kuhn in his distinction between science and ideology? Explain.
10. Is Popper's criterion of falsifiability a solution to the problem of demarcation? Why or why not? Why would Gierre or Kuhn disagree? Explain
11. Kuhn, in his "Logic of Discovery or Psychology of Research?" disagrees with Popper's criterion of falsifiability as defining the essence of science. What does he think is wrong with Popper's view, and what does he advance as a more adequate demarcation for science and non-science? Do you think Kuhn is correct?
12. Explain the distinction between incrementalism and anti-incrementalism. Which is Kuhn's view? Does Kuhn have a convincing argument to support his view? Why or why not?

13. What is a paradigm? Why does Kuhn think paradigms are important to science?
14. Explain why Kuhn thinks that scientists deeply involved in what he calls “normal science” are resistant to revolution.
15. What is Kuhn’s concept of incommensurability? Why have some critics seen serious problems in this idea?
16. Explain the contrasts between Popper and Kuhn on the relation between science and metaphysics. What are their respective arguments supporting their positions? Which, if any, has the stronger position? Explain.
17. What is the disagreement between Popper and Kuhn on *ad hoc* modification of hypotheses after negative test results?
18. Explain Kuhn’s critique of Popper’s falsification?
19. Does Popper have a problem explaining scientific progress? Does Kuhn have the same problem? Why or why not?
20. Is Kuhn a relativist? Is Kuhn an anti-realist? Why or why not?
21. Why does Laudan believe that Judge Overton in the *McLean* opinion made the right decision for the wrong reasons? Explain Ruse’s disagreement with Laudan.

Know the following terms and distinctions: metaphysics, epistemology, problem of demarcation, empiricism/ rationalism, logical positivism, critical rationalism, verification/falsification, empirical/analytical statements, theoretical/observation statements, C-Rules, weak/strong verification, verification in practice/principle, scientific law/hypothesis/theory, conjecture, *ad hoc* modification, verisimilitude, incrementalism/anti-incrementalism, incommensurability, normal/revolutionary science, paradigm/pre-paradigm science, realism/anti-realism, relativism/objectivism.