

### **Study questions for [GS] Introduction**

1. What does empiricism claim?
2. Describe the view of science that empiricism subscribes to.
3. What is the relation between mathematics and science according to Galileo?
4. How can the social structure of science affect how it is done?
5. What is instrumentalism?
6. Describe the mechanical view of the world.

### **Study questions for [GS] Chapter 2: Logic Plus Empiricism**

1. What is the difference between external world skepticism and inductive skepticism?
2. Is empiricism compatible with external world skepticism? Explain.
3. How are rationalists different from empiricists?
4. What do "idealist" philosophies like Hegel's claim about the world?
5. What is the distinction between an analytic sentence and a synthetic sentence?
6. What does the verifiability theory of meaning claim?
7. What did the positivists mean by "verification".
8. What is wrong with the claim "God exists", according to the verifiability theory of meaning?
9. What is the distinction between "observation" language and "theoretical" language?
10. What is the difference between deductive logic and inductive logic, according to the positivists?
11. What is the distinction between the "context of discovery" and the "context of justification"?
12. When it comes to analyzing science, what is the status of logic compared with history and psychology, according to the positivists?
13. Describe a problem with the verifiability theory of meaning.
14. What does holism about testing (*i.e.*, the "Duhem-Quine thesis") claim? In what sense does it argue against the verifiability theory of meaning?
15. In what sense does the Duhem-Quine thesis argue against the analytic-synthetic distinction.
16. According to the holistic empirical theory of meaning, how does a theoretical term like "electron" obtain its meaning?
17. According to Hempel's "Theoretician's Dilemma", what role does a theoretical term like "electron" play in scientific theories about electromagnetic phenomena?
18. What did Carnap, Hahn, and Neurath mean when they said "In science there are no 'depths'; there is surface everywhere"?
19. What does scientific realism claim?

### **Study questions for [S] Chapter 1: The Prehistory of Science and Technology Studies**

1. According to a "common picture of science", what is the relation of technology to science? Why does science make progress?
2. According to logical positivists, what is a scientific theory?
3. According to Sismondo, what is a problem with reducing meaning to observation?
4. What is the key task of philosophy of science for Popper?
5. What is the key characteristic of a falsifiable theory?
6. According to Sismondo, what is *realism* with respect to science?

7. What is a social aspect of the standard picture of science?
8. In what sense is the "standard view of science" a view of ideal science?
9. What are two senses of determinism that arise in discussions of technology and science?
10. According to Sismondo, what is the difference between "Science, Technology and Society" and "Science and Technology Studies"?

### **Study questions for [GS] Chapter 3: Induction and Confirmation**

1. What is the problem of induction?
2. Why is appealing to past experience an inadequate way to justify induction?
3. What characterizes a deductive argument?
4. How does enumerative induction differ from projection?
5. How do explanatory inferences differ from enumerative induction?
6. What is hypothetico-deductivism?
7. According to Hempel, what sort of thing confirms the generalization "All F's are G"?
8. In what sense does a white shoe confirm the generalization "All ravens are black"?
9. Suppose you want to test the claim "All ravens are black".
  - (a) Why is determining the color of a raven behind someone's back a relevant test?
  - (b) Why is determining the nature of a black thing behind someone's back not a relevant test?
  - (c) Why is determining the nature of a white thing behind someone's back a relevant test?
  - (d) Why is determining the color of a shoe behind someone's back not a relevant test?
10. What is a "formal" theory of confirmation?
11. What is "grue"?
12. How is an inference from emeralds observed before a given date to the claim all emeralds are green, similar to an inference from emeralds observed before the same date to the claim all emeralds are grue?
13. What did Goodman conclude from a comparison of the inferences described in #12?
14. In what sense are the *words* "green" and "grue" similar? In what sense are the *properties* that "green" and "grue" pick out different?

### **Study questions for [GS] Chapter 4: Popper: Conjecture & Refutation**

1. What is the problem of demarcation?
2. What is falsificationism?
3. According to Popper, why are Marxism and psychoanalysis (Freudian psychology) not scientific theories?
4. Why is inductive skepticism not a problem for science, according to Popper?
5. Does Popper think it is *ever* possible to confirm a theory in science?
6. What is fallibilism?
7. Why are universal statements ("All F's are (not) G") hard or impossible to verify, but easy to falsify?
8. Why are existential statements ("Some F's are (not) G") hard or impossible to falsify, but easy to verify? Why did Popper not worry about these types of statements?
9. Describe Popper's method of conjecture and refutation.
10. Why should scientists be in the business of increasing the boldness of conjectures?

11. How is holism about testing a problem for Popper?
12. In what sense are theories that place low probabilities on specific observations, but do not rule them out altogether, unfalsifiable?
13. Why is it a problem, under Popper's view, to choose a theory that has passed many tests over a new theory that is yet to be tested?
14. What is a "corroborated" theory? How is it different from a "confirmed" theory?
15. How is confirmation like a letter of recommendation? How is corroboration like an academic transcript?
16. What is the difference between saying Marxism is not a scientific theory vs saying Marxist ideas are not "handled" in a scientific way?
17. How might a Precambrian rabbit not be a crucial test for evolutionary theory?