Questions for Exam 2

Philosophy 270

Spring 2010

Exam 2 will consist of a selection of these questions.

1. Did Copernicus use what Bacon calls the method of anticipation of nature, or the method of interpretation of nature, or something else? Justify your answer by explaining the method Copernicus used and how it differs from the other method(s).

2. What did Bacon say needs to be done to determine whether it is the earth or the heavens that rotates once per day? Did Copernicus do that?

3. What did Bacon propose as a crucial instance for determining whether it is the earth or the heavens that rotates once per day? Is this really a crucial instance? Could Bacon reasonably have thought that observation might give the result he says would prove the earth is stationary? Explain.

4. (a) What did Descartes say is needed for knowledge to be perfected? (b) What is the first condition he said principles must satisfy? (c) How does what Descartes says here differ from Aristotle?

5. What is the first principle of Descartes's philosophy? What is his argument for it?

6. What is an argument that Descartes gives for the existence of a perfect being? Is the argument valid? Explain.

7. Having established (a) the existence of a perfect being, Descartes argues that it follows that (b) we cannot be mistaken about the things of which our mind has a very clear and distinct perception. Explain fully Descartes's argument that (b) follows from (a).

8. Descartes said that his theory of vortices, and his theories about the invisible parts of bodies, could be false. Would he say that if he had got them by following the methodology that, at the beginning of *Principles of Philosophy*, he said should be followed? Explain.

9. What is an argument that Descartes gave for saying that his theories about the invisible parts of bodies could be false?

10. Descartes claimed that his theories about the invisible parts of bodies were "morally certain." What does this mean? How did Descartes argue for this claim?

11. Descartes gave an argument that his theory of vortices, and his theories about the invisible parts of bodies, are absolutely certain; but in each case he soon backed away from the argument. What is the argument? Is the argument a good one? Explain.

12. Explain what relative time is, give an example of it, and say how it differs from absolute time.

13. Explain what relative space is, give an example of it, and say how it differs from absolute space.

14. Explain what relative and absolute motion are. Give an example in which they differ.

15. A stone is thrown horizontally and eventually falls to the ground. Explain how Newton's laws of motion imply that there is a force acting on the stone after it has been thrown, and the direction of this force. (Assume the earth is at rest.)

16. A magnet and a piece of iron are floating in separate dishes in a basin of water. The magnet is twice as heavy as the iron. The iron has acceleration a towards the magnet. Use Newton's laws of motion to determine the magnitude and direction of the acceleration of the magnet; indicate which laws you are using and where they are used.

17. According to Newton, what is the direction of the force that keeps the moon in its orbit? From what did Newton deduce this?

18. According to Newton, how is the force on the moon related to the moon's distance from the earth? From what did Newton deduce this?

19. Explain how Newton argued, from the properties of the force that keeps the moon in its orbit, that this force is gravity. Say where Newton's rules of reasoning are used in this argument.

20. Explain how, after arguing that the moon is kept in its orbit by gravity, Newton argued that all planets have gravity. Say where Newton's rules of reasoning are used in this argument.

21. How did Newton argue that the center of gravity of the system of the world is at rest? How does it follow from this that the earth moves?

22. (a) When Newton said that "hypotheses ... have no place in experimental philosophy," did he mean that hypotheses should not be stated? Justify your answer with at least one reference to Newton's writings. (b) Did Newton accept the method of hypothesis? What was his reason?

23. According to Newton, what is the right way to establish causes and general laws in science? Did Newton follow this method when he argued that the moon is held in its orbit by gravity? Justify your answer to the latter question. Give specific details.

24. According to Hume: (a) what are beliefs about the future based on? (b) which part of this basis can't be justified and why can't it be justified? (c) why are all beliefs about the future unjustified?

25. Did Hume think we should stop having beliefs about the future? Support your answer with a quotation from Hume.

26. According to Hume, what is the principle of human nature that causes us to have beliefs about the future? Give an example of how this cause can produce a belief about the future.

27. Explain what it means for a statement to be analytic or synthetic and give an example of each kind of statement.

28. State one similarity and two differences between Popper and Hume on induction.

29. Compare and contrast Popper's view of scientific method with the method of hypothesis (as advocated, for example, by Descartes).

30. What are Popper's requirements for an acceptable theory in empirical science? Explain what each requirement means.

31. Why can't theories be falsified deductively? What is the methodological rule that Popper introduced to ensure that theories can be falsified?

32. Can Popper's scientific method ever require a true theory to be regarded as false? Explain.

33. On Popper's account of science, is there any justification for believing that the theories accepted in science are true or that the theories rejected by science are false? Explain.

34. Do good scientists behave in accordance with Popper's rules of scientific method? Support your answer with an example.

35. What must happen in order for scientists to give up a paradigm, according to Kuhn?

36. Can the following claims of Kuhn be explained in terms of what is probable given the evidence? Justify your answers.

    (a) Anomalies normally don't cause a paradigm to be abandoned.

    (b) Severe and prolonged anomalies cause a sense of crisis.

    (c) Paradigms aren't abandoned without a better alternative.

37. Describe a situation in which the inductive probability of a die landing six, given the available evidence, is (a) the same as its physical probability, (b) different to its physical probability.

38. "Probability measures the confidence that a particular individual has in the truth of a particular proposition" (Leonard J. Savage, *The Foundations of Statistics*, p. 3). Is this a correct account of inductive probability? Justify your answer.

39. Give an example of an elementary sentence for inductive probability in which the hypothesis is that it will rain tomorrow.

40. What does it mean for a function to be logical? Is inductive probability logical? Justify your answer to the latter question.

41. Suppose you were to reason as follows: "Only a small proportion of people live to be 100 years old, so I will probably not live to be 100 years old."

    (a) How would your inference be represented in the standard model of inductive inference? State a criticism of this representation.

    (b) How would your inference be represented in the probabilistic model of inductive inference?

42. Hume and Popper claimed that inductive inferences are based on a synthetic assumption that hasn't been observed to be true. Were they right? Justify your answer.