
Monday 3 June 2002

9-12

HISTORY AND PHILOSOPHY OF SCIENCE (1)

History of Science

*Answer the question in **Section A** and **three** questions chosen from **Section B***

SECTION A

- 1 When did science begin?

SECTION B

- 2 EITHER (a) How did the institutions and organizations which supported natural philosophy in Europe change between 1550 and 1700?

OR (b) 'The anatomy theatre was to medicine what the observatory was to astronomy.' Discuss the extent to which this analogy holds true for the period 1500-1700.

- 3 'The mechanisation of the world-picture.' Is this what European cosmology achieved by the end of the seventeenth century?

4 'The instruction we are able to get from books is soon exhausted, but philosophical instruments are an endless source of knowledge' (JOSEPH PRIESTLEY, 1775). Is this dictum borne out by the course of seventeenth- and eighteenth-century natural philosophy?

- 5 What was the importance of global trade and exploration for the development of natural philosophy and natural history in the eighteenth century?

6 'It is remarkable how Darwin recognizes among beasts and plants his English society with its division of labour, competition, opening up new markets, "inventions", and the Malthusian "struggle for existence".' (KARL MARX, 1862) Does he?

- 7 What part did theory, philosophy and experiment each play in Einstein's discovery of special relativity?

8 Was the initial persuasiveness of psychoanalysis due solely to its being perceived as the science of sexuality?

9 Theoretical physicists of the late nineteenth- and early twentieth-centuries aimed for 'intellectual mastery of nature'. From this perspective, was the dropping of the atomic bomb on Hiroshima a triumph or a betrayal?

10 Was the hospital medicine of the early nineteenth-century the scientific predecessor of laboratory medicine?

11 How did **either** scientific **or** medical research **or both** change as a result of World War II?

12 Why does the Modern Evolutionary Synthesis date from the 1930s rather than the 1860s or the 1900s?

13 EITHER *(a)* What is eugenics, and how did its scientific status change in the century after the term was first introduced in 1883?

OR *(b)* If there had been a male pill available, would Francis Galton (or his cousin Charles Darwin) have encouraged their sons to take it?

END OF PAPER

Tuesday 4 June 2002

9-12

HISTORY AND PHILOSOPHY OF SCIENCE (2)

Philosophy of Science

Answer the question in **Section A** and **three** questions chosen from **Section B**

SECTION A

- 1 Is scientific inquiry common sense in disguise?

SECTION B

- 2 EITHER (a) What do the sceptical arguments of Descartes tell us about the nature of inquiry?
OR (b) Does the past track record of our inductive methods bear on their future prospects?
- 3 EITHER (a) Where are colours?
OR (b) Do scientific theories describe reality or solely allow us prediction and control?
- 4 EITHER (a) What is the connection between causes and counterfactuals?
OR (b) Are the laws of nature necessary truths?
- 5 What is a rigid designator? Are there any? What difference does it make?
- 6 'Insofar as *understanding why* is different from *knowing that*, science has no need for *understanding why*.' Discuss.
- 7 Does the Kuhnian notion of an exemplar illuminate scientific practice?
- 8 EITHER (a) Has Popper shown that negative evidence is more important than positive evidence?
OR (b) Do the positive instances of a hypothesis confirm it?
- 9 EITHER (a) 'Probability is the subjective level of conviction of a certain individual regarding the occurrence of a specific event.' Do you agree?
OR (b) To what extent is mathematics inductive?
- 10 Is right conduct in research the only ethical concern for the scientist or do scientists have ethical responsibility for the uses to which science is put?

11 EITHER (a) 'Space by itself, and time by itself, are mere shadows, and only a kind of union of the two has an independent reality' (HERMANN MINKOWSKI, 1906). Discuss.

OR (b) Explain what is meant by the measurement problem in quantum mechanics. How does it arise, and how has it been proposed that it might be solved?

END OF PAPER