

NATURAL SCIENCES TRIPOS Part IB

Monday 1 June 2009

1.30 to 4.30

HISTORY AND PHILOSOPHY OF SCIENCE (1)

History of Science

Before you begin read these instructions carefully:

Answer **one** question from **Section A** and **three** questions chosen from **Section B**

Begin each answer on a separate sheet.

*Write legibly and on only **one** side of the paper.*

Answers must be tied up in separate bundles, marked 1, 2, 3, etc. according to the number of the question.

*Attach a completed coversheet to each bundle and complete a master coversheet listing all questions attempted. It is essential that you write your examination number and **not** your name on the cover sheet and on **each** bundle.*

STATIONERY REQUIREMENTS

Script paper, blue coversheets, yellow master coversheet, and tags.

You may not start to read the questions printed on the subsequent pages of this question paper until instructed that you may do so by the Invigilator

HISTORY AND PHILOSOPHY OF SCIENCE (1)

History of Science

SECTION A

- 1 Have institutions or individuals played the greater role in the history of science?
- 2 “Science knows no country” (Louis Pasteur). How has science travelled?

SECTION B

- 3 Who was involved in the production of knowledge in ancient and medieval Iraq?
- 4 Would the history of medicine be different if Vesalius had anatomised dogs instead of humans?
- 5 **Either** (a) Who observed the heavens in Early Modern Europe, and why?
Or (b) Was there anything novel about the uses of experiments and instruments in the seventeenth century?
- 6 **Either** (a) When, where and how did science become a profession?
Or (b) “During the nineteenth and early twentieth centuries, the study of life moved from the garden and the field to the laboratory and the hospital.” Do you agree?
- 7 “New social relations produce new views of disease.” Discuss with reference to nineteenth-century medicine.
- 8 Why did it take Charles Darwin to formulate the theory of evolution by natural selection?

PLEASE TURN OVER

- 9 **Either** (a) “We will no longer tolerate intimidation by white-coated gods, antiseptically directing our lives” (Washington D.C. Women’s Liberation, 1970). What difference has feminism made to science, technology and medicine since the 1960s?
- Or** (b) “In technological change users are more important than designers.” Discuss with reference to the history of nuclear weapons, oral contraceptives, or both.
- 10 **Either** (a) Why were physicists so well funded in the decades immediately after the Second World War?
- Or** (b) Why wasn’t the structure of DNA discovered before 1953?
- 11 How have drugs changed the treatment of mental disorders since the 1950s?
- 12 To what extent do environmental science and environmental politics have separate histories during the twentieth century?

END OF PAPER

NATURAL SCIENCES TRIPOS Part IB

Tuesday 2 June 2009

9.00 to 12.00

HISTORY AND PHILOSOPHY OF SCIENCE (2)

Philosophy of Science

Before you begin read these instructions carefully:

Answer **one** question from **Section A** and **three** questions chosen from **Section B**

Begin each answer on a separate sheet.

*Write legibly and on only **one** side of the paper.*

Answers must be tied up in separate bundles, marked 1, 2, 3, etc. according to the number of the question.

*Attach a completed coversheet to each bundle and complete a master coversheet listing all questions attempted. It is essential that you write your examination number and **not** your name on the cover sheet and on **each** bundle.*

STATIONERY REQUIREMENTS

Script paper, blue coversheets, yellow master coversheet, and tags.

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HISTORY AND PHILOSOPHY OF SCIENCE (2)

Philosophy of Science

SECTION A

1 “It is a capital mistake to theorise before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts” (Sherlock Holmes). Is this good advice for scientists?

2 Is philosophy of science about what science is, or what it ought to be?

SECTION B

3 **Either** (a) Is any regularity theory of causation defensible?

Or (b) Evaluate the “best system” account of laws of nature.

4 Is induction rational if it is reliable?

5 Do all of an event's causes explain it?

6 **Either** (a) Does evolutionary psychology provide good reasons for thinking there is a single human nature?

Or (b) Does inference to the best explanation demand assent to the intelligent design hypothesis?

7 **Either** (a) Do social interests explain what is accepted as scientific knowledge?

Or (b) Faced with the sociology of scientific knowledge, is it rational to become an epistemic relativist?

8 **Either** (a) What, if anything, does the Experimenters' Regress show?

Or (b) Can knowledge be both scientific and tacit?

9 Compare Popper's and Kuhn's views of scientific progress.

PLEASE TURN OVER

- 10 How can Platonists know mathematical truths?
- 11 Why is Poincaré said to be a conventionalist about physical geometry?
- 12 “The only ethical problems in science concern its application.” Discuss.

END OF PAPER