

NATURAL SCIENCES TRIPOS Part IB

Monday 2 June 2008

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.

<p>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</p>
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HISTORY AND PHILOSOPHY OF SCIENCE (1)

History of Science

SECTION A

- 1 On the evidence of history, does science change gradually or through revolution?
- 2 “Religion has helped science but science has harmed religion.” Discuss.

SECTION B

- 3 What did mathematics mean to its practitioners and patrons in ancient and medieval Iraq?
- 4 Was travel or experiment more important to the development of the life sciences in early modern Europe?
- 5 **Either** (a) Were showmanship and publicity-seeking necessary for natural philosophical success in the seventeenth and eighteenth centuries?
Or (b) How did instruments shape natural philosophy in the seventeenth and eighteenth centuries?
- 6 What roles did classification and quantification play in the early development of physics and chemistry?
- 7 'Read little, see much, do much'. How closely does Fourcroy's exhortation reflect changes in European medical education and practice in the late 18th and early 19th centuries?
- 8 **Either** (a) In what ways, if any, would the history of science be different if Charles Darwin had drowned on the *Beagle*?
Or (b) Did Gregor Mendel finish what Charles Darwin had begun?
- 9 Why are there so few women in histories of nineteenth-century science?
- 10 **Either** (a) What made it possible for Albert Einstein to propose the theory of special relativity in 1905?
Or (b) Why did the scientific community respond as it did to the dropping of the atomic bombs in 1945?
- 11 **Either** (a) Why is the history of psychiatry so marked by repeated oscillation between psychological and physical methods of treatment?
or (b) How did the construction of sickle-cell anaemia as a “molecular disease” impact on its research and treatment?

NATURAL SCIENCES TRIPOS Part IB

Tuesday 3 June 2008

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

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HISTORY AND PHILOSOPHY OF SCIENCE (2)

Philosophy of Science

SECTION A

- 1 What should the philosopher of science learn from the scientist?
- 2 Does the history of science show the philosophy of science to be a waste of time?

SECTION B

- 3 Solve the problem of induction.
- 4 Should we adopt a counterfactual account of causation?
- 5 Can epistemic scepticism be refuted?
- 6 Does the scientific understanding of forms of knowledge require relativism?
- 7 “One proposition confirms another if and only if it makes it more probable”. Discuss.
- 8 How do scientists answer “why” questions?
- 9 **Either** (a) Is the acceptance and rejection of scientific theories a matter of mob psychology? Discuss with reference to Popper and Kuhn.
Or (b) Does Kuhn refute Popper?
- 10 Should we believe our successful scientific theories to be true, or would a more cautious attitude be appropriate?
- 11 What problems do functional laws pose for a simple regularity account of laws of nature?
- 12 **Either** (a) The panda’s thumb would never have been created by an intelligent designer. Therefore, the intelligent design hypothesis should be rejected. Evaluate this argument.
Or (b) Evolutionary theory explains why we have the moral beliefs we do. Therefore, our moral beliefs are probably false. Discuss.
13. On what basis should decisions be made about the funding of scientific research?