

NATURAL SCIENCES TRIPOS Part IB

---

Monday 6 June 2011

13.30 to 16.30

Guildhall

---

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>
--

## HISTORY AND PHILOSOPHY OF SCIENCE (1)

### History of Science

#### SECTION A

1. If you were writing a book entitled the *Origins of Modern Science*, which historical period would it be about?
2. In what ways do earlier centuries' conceptions of the scientific role continue to inform our understanding of what it means to be a scientist in the twenty-first century?

#### SECTION B

3. Compare and contrast the ways in which knowledge of the natural world was made by physicians and natural philosophers in early modern Europe.
4. Did experimental philosophy displace the magical and occult arts in the seventeenth century?
5. What was the role of novel instrumentation in the development of electricity and of chemistry during the eighteenth century?
6. Discuss this extract from a 1971 advertisement for the *Financial Times*: 'Isaac Newton is the British physicist linked forever in the schoolboy mind with an apple that fell and bore fruit throughout physics.'
7. What differences did laboratories make to the development of the sciences during the nineteenth century? Discuss in relation **EITHER** to the physical sciences **OR** to the life sciences.
8. Was Charles Darwin a professional scientist?
9. Did Alfred Wegener's theory of continental drift initiate a scientific revolution?
10. What effect did the discovery of the structure of DNA have on the biological sciences?
11. 'It is of no significance whatsoever *where* nineteenth-century medical science was done. What matters is *how*.' Discuss.
12. Compare and contrast ideas about the origins and purpose of science in ancient and medieval Iraq.

**END OF PAPER**

NATURAL SCIENCES TRIPOS Part IB

---

Tuesday 7 June 2011

09.00 to 12.00

Wesley Church, King Street

---

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.

<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>
--

## HISTORY AND PHILOSOPHY OF SCIENCE (2)

### Philosophy of Science

#### **SECTION A**

1. When theory and observation clash, is it always theory that is to blame?
2. How, if at all, does scientific reasoning differ from everyday reasoning?

#### **SECTION B**

3. What is the best reason for thinking that the future will resemble the past?
4. **EITHER** (a) Do laws of nature make things happen?  
**OR** (b) Do explanations cite causal information?
5. What is the most significant point of contrast between Popper's and Kuhn's views on scientific method?
6. Discuss cases of productive counter-induction. Are they rare exceptions or rather typical in scientific practice?
7. Could a false theory or model be successful?
8. Have there been any major theory-changes in the physical sciences which exhibit Kuhnian incommensurability?
9. Should metaphysics change according to the latest development in science? Discuss with reference to examples from the physical sciences.
10. Is measurement theory-laden? How does that issue relate to the Duhem–Quine thesis?
11. 'Evolutionary theory is not scientific because it is no more than a tautology.' Discuss.
12. Must scientists always tell the truth?

**END OF PAPER**