

HISTORY AND PHILOSOPHY OF SCIENCE (1)

**Classical Traditions in the Sciences**

**Before you begin read these instructions carefully:**

*Students taking **History and Philosophy of Science** or **Classics** should answer **four** questions: answer **one** question chosen from **Section A** and **three** questions chosen from **Section B**.*

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## Paper 1: Classical Traditions in the Sciences

### SECTION A

1. What makes a 'classical tradition' in the sciences?
2. To what extent was the history of the sciences in the pre-modern period linked to the spread of literacy?
3. How important was the creation of new knowledge to scholars and natural philosophers in the periods before 1600 AD?

### SECTION B

4. **EITHER** (a) Why did the Assyrian king need scholars at court?  
**OR** (b) How successfully did cuneiform scholarship adapt to the end of indigenous rule in Babylonia?
5. Anaximander (6th century CE) has been credited with having produced 'the first specimen of a new genre, the treatise *Peri Physeōs*, "On the Nature of Things".' Discuss the significance of this new genre.
6. **EITHER** (a) 'The puzzle is not why the ancient Chinese did not invent the axiomatic-deductive method of proof, so much as why certain Greeks did.' Discuss.  
**OR** (b) Is there any neutral way to evaluate the strengths and weaknesses of the cosmologies in Aristotle's *On the Heavens* and in *Huainanzi*?
7. 'Astronomy can be understood to be the oldest of the sciences, because of its reliance on instruments.' Discuss.
8. 'Arabic science had become autonomous by the eleventh century CE.' Discuss.
9. 'Arabic science is a conduit through which Greek scientific ideas became known to Latin Europe.' Evaluate this statement.
10. How and why were classical traditions useful to Renaissance natural philosophers?
11. How should we write the history of natural philosophy?
12. Why did it take so long for the toxic properties of mercury to be taken seriously?

**END OF PAPER**

HISTORY AND PHILOSOPHY OF SCIENCE (2)

**Natural Philosophies: Renaissance to Enlightenment**

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## Paper 2: Natural Philosophies: Renaissance to Enlightenment

### SECTION A

1. What, if anything, was new about the organization of knowledge production in early modern Europe?
2. 'Historians are in no doubt that there were connections between reverence for science and irreverence toward religion' (John Brooke, *Science and religion: some historical perspectives*). Discuss with reference to the development of natural knowledge between 1600 and 1800.
3. How, if at all, did travel change European notions of nature and culture between 1600 and 1800?

### SECTION B

4. Did magic turn into science in the seventeenth century?
5. How important were observatories in generating new astronomical knowledge in early modern Europe?
6. **EITHER** (a) Did alchemists do experiments?  
**OR** (b) Why were some forms of astrology legitimate and others not?
7. How did seventeenth- and eighteenth-century natural philosophers decide which observations were 'real and perfect' (Robert Hooke)?
8. Why were seventeenth-century discussions of novelty so concerned with tracing origins?
9. In what ways was eighteenth-century natural history an economic practice?
10. Compare and contrast the significance of *Principia mathematica* and of *Opticks* in Isaac Newton's natural philosophy.
11. 'The use of instruments as demonstration apparatus in the eighteenth century was as much about curiosity, wonder and spectacle as about gaining new knowledge.' Do you agree?
12. **EITHER** (a) Why were collections so indispensable for early modern naturalists?  
**OR** (b) 'The disagreements between Buffon and Linnaeus went far deeper than classification.' Discuss.

**END OF PAPER**

HISTORY AND PHILOSOPHY OF SCIENCE (3)

**Science, Industry, and Empire**

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## Paper 3: Science, Industry and Empire

### SECTION A

1. What roles did audiences and institutions play in generating consent in nineteenth-century science?
2. To what extent, if at all, did science supplant religion as a way of understanding the natural world during the nineteenth century?
3. How was it possible for the public to know more about science during the nineteenth century, even as access to the places where science was done became increasingly limited to specialists?

### SECTION B

4. How and why did the scientific relevance of Biblical Assyria change over the course of the nineteenth century?
5. **EITHER** (a) Compare and contrast the uses of geological, anthropological and zoological evidence used in Victorian debates over man's place in nature.  
**OR** (b) 'No subject has lately excited more curiosity and general interest among geologists and the public than the question of the Antiquity of the Human Race' (Charles Lyell, 1863). What role did the public play in nineteenth-century debates over human evolution?
6. How was the nineteenth-century novel experimental?
7. 'The kitchen is a chemical laboratory' (1821). What kinds of science could be done in the nineteenth-century home?
8. **EITHER** (a) How did the display of imperial prizes, commodities and goods contribute to the making of nineteenth-century scientific knowledge?  
**OR** (b) How did nineteenth-century scientists make use of imperial networks?
9. **EITHER** (a) 'The physical laboratory system has now become quite universal. No university can now live until it has a well-equipped laboratory' (Sir William Thompson, 1885). Discuss.  
**OR** (b) Compare and contrast the nineteenth-century development of the observatory and of the laboratory.
10. Was Charles Darwin's the most important evolutionary theory of the nineteenth century?

(TURN OVER)

11. Was Alexander von Humboldt as much a man of empire as he was a man of science?
12. Did late nineteenth-century physical sciences support or refute materialism?

**END OF PAPER**

HISTORY AND PHILOSOPHY OF SCIENCE (4)

**Metaphysics, Epistemology, and the Sciences**

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## **Paper 4: Metaphysics, Epistemology and the Sciences**

### **SECTION A**

1. Is scientific realism just common sense?
2. Do different sciences have different methods?
3. Can science explain everything?

### **SECTION B**

4. Is it true that the Big Bang is a cause of your birth?
5. 'There are no laws of nature because all universal generalizations are only accidentally true.' Discuss.
6. Is the reliabilist justification of induction question-begging?
7. Is it possible for scientific realists to avoid the pessimistic induction from the history of science?
8. Is the theory of evolution testable?
9. Is the human mind like a Swiss-Army knife?
10. Have there been cases in which chemists working in the same area of study exhibited divergent epistemic values? If so, is this significant?
11. 'Relativity theory is deterministic; quantum mechanics is indeterministic.' Discuss.
12. How was the logical positivist view of the nature of scientific theories challenged by later philosophers?

**END OF PAPER**

HISTORY AND PHILOSOPHY OF SCIENCE (5)

**Science in Society**

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## Paper 5: Science in Society

### SECTION A

1. What are the implications of sociology of science for science policy?
2. What does anthropology bring to the study of scientific communities?
3. What is social about scientific knowledge?

### SECTION B

4. **EITHER** (a) What should a study of 'co-production of knowledge' show?  
**OR** (b) Is the concept of 'experimental system' useful for sociology of science?
5. How does the sociology of science make sense of scientists' references to and invocations of invisible entities like 'the gene' or 'the electron'?
6. Can scientific writing be distinguished from other forms of persuasion?
7. Where does mathematics come from?
8. 'When there is nothing else to trust, people trust numbers.' Discuss.
9. Why and how did colonial medical practices attempt to intervene into African bodies and families? To what extent were they successful?
10. What is the value of an ethnographic approach to understanding medical research in contemporary Africa?
11. **EITHER** (a) 'Gender is located above, sex below the belt.' Discuss.  
**OR** (b) Discuss Voltaire's statement that 'Émilie du Châtelet was a great man whose only fault was being a woman.'
12. How should we educate for scientific and/or mathematical competence and confidence?

**END OF PAPER**

HISTORY AND PHILOSOPHY OF SCIENCE (6)

**History and Philosophy of Mind**

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## Paper 6: History and Philosophy of Mind

### SECTION A

1. Does the history of the mind sciences teach us which are the best – and also the worst – methods for studying the mind?
2. Is there an unconscious mind?
3. Why, given that we have immediate access to the mind, do we have such difficulty in acquiring scientific knowledge of it?

### SECTION B

4. Describe and criticize the Cartesian argument for distinguishing mind and matter.
5. **EITHER** (a) Could any sort of mental state or event be what it is in virtue of its functional role?  
**OR** (b) Is it reasonable to fear a future pain whatever psychological changes precede it?
6. Could you be somebody whom somebody else remembers being?
7. How should we think in general terms about the relationship between the meanings of words and the mental representation of the world?
8. Can psychoanalysis explain anything?
9. Freud (1900) claimed that the study of dreams demonstrated that ‘the most complicated achievements of thought are possible without the assistance of consciousness’. What followed from this demonstration?
10. **EITHER** (a) How could Freud propose a revolutionary theory of human sexuality without making any direct experiments on human bodies or undertaking direct observation of human sexual behaviour?  
**OR** (b) Why have writers and artists been so influenced by psychoanalysis?
11. What can the history of the psychoanalytic movement teach us about the history of modern science in general?

(TURN OVER)

12. **EITHER** (a) Should Michel Foucault's *The History of Madness* be renamed *The History of Psychiatry*?
- OR** (b) Is schizophrenia a natural kind?

**END OF PAPER**

HISTORY AND PHILOSOPHY OF SCIENCE (7)

**Medicine from Antiquity to the Enlightenment**

**Before you begin read these instructions carefully:**

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*Students taking **Biological and Biomedical Sciences** should answer **THREE** questions, all of them chosen from **Section B**. Do not answer any questions from **Section A**.*

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## Paper 7: Medicine from Antiquity to Enlightenment

### SECTION A

1. Explanations of the causes and treatments of disease remained more or less static before 1750. Discuss.
2. Why is it useful for historians of medicine to study the social and religious contexts of healing from Antiquity to Enlightenment?
3. From the ancient to the early modern worlds, is the role of women in medical care best characterized as a history of change or of continuity?

### SECTION B

4. Who was involved in healing the sick in ancient Mesopotamia, and how?
5. 'The history of Roman medicine is inseparable from that of Greek medicine.' Discuss.
6. **EITHER** (a) 'The average doctor was on the social level of an artisan, possessing neither wealth nor importance.' To what extent is this true of Graeco-Roman society?  
**OR** (b) What problems did sick people face in selecting treatment in the ancient world?
7. **EITHER** (a) Were medieval responses to the Black Death grounded more in fear of God than belief in doctors?  
**OR** (b) 'Leper by the will of God.' How does this statement help us to understand medieval responses to leprosy?
8. **EITHER** (a) 'The learned medicine of the schools had little to do with how medicine was practised in medieval Europe.' Discuss.  
**OR** (b) 'All those illiterates – barbers, sorcerers, landlords, tricksters, counterfeiters, alchemists, bawds, go-betweens, midwives, old women, converted Jews, Saracens – proclaim themselves surgeons.' (Henri de Mondeville, 1260–1320; surgeon). How accurately does de Mondeville reflect the range of medical practitioners in the Middle Ages?
9. To what extent did the social and economic status of medieval and early modern patients determine how and where they were treated?

(TURN OVER)

10. How should we assess the impact of print technology on medical communications in England between 1450 and 1640?
11. Was medicine a trade or a profession in early modern Europe?
12. What did it mean for medicine to 'work' in early modern Europe?

**END OF PAPER**

HISTORY AND PHILOSOPHY OF SCIENCE (8)

**Modern Medicine and Biomedical Sciences**

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## Paper 8: Modern Medicine and Biomedical Sciences

### SECTION A

1. 'Medical technologies have not shaped society. Rather, society has shaped medical technologies.' Assess for the nineteenth and twentieth centuries.
2. 'Modern medicine is based on knowledge gained by experiment, and this is the secret of its success.' Discuss.
3. 'Big promises and bigger disappointments.' Is that a fair summary of the history of science in medicine since 1789?

### SECTION B

4. 'Read little, see much, do much', physicians and surgeons told their students in post-revolutionary Paris. To what extent did their successors follow this advice?
5. Who was viewed as responsible for preventing disease in Victorian cities?
6. 'Women are marked out by nature for very different offices in life from those of men' (Henry Maudsley, 1874). How, then, did the first women doctors justify their place in the medical profession?
7. Were there really two great revolutions in surgical practice during the nineteenth century?
8. 'It makes no sense to speak of a "standard model" for the production of industrial pharmaceuticals when this was organized so differently in different countries at different times.' Discuss.
9. 'The medical establishment has become a major threat to health' (Ivan Illich, 1976). What was 'the medical establishment' and why did Illich and others criticize it so fiercely?
10. **EITHER** (a) How did 'scientific management' change medicine in general and physiology in particular?  
**OR** (b) What does it mean to say that theories of human physiology have shifted 'from fixed capacities to performance enhancement'? Is this an accurate description of changes between c.1880 and 1950?

(TURN OVER)

11. **EITHER** (a) 'An ongoing trend towards medicalization.' Is this phrase a useful summary of the history of pregnancy and childbirth since 1750?
- OR** (b) Is it generally true that reproductive technologies have been developed on animals first and then applied to women?
12. Have doctors been leaders in 'global health' and should this be their role?

**END OF PAPER**

HISTORY AND PHILOSOPHY OF SCIENCE (9)

**Images of the Sciences**

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## Paper 9: Images of the Sciences

### SECTION A

1. 'What has history to do with me? Mine is the first and only world' (Wittgenstein). Is this a reasonable attitude for a scientist?
2. Why has it been claimed that science is free of values?
3. What (if anything) does philosophy of science have to do with ideology?

### SECTION B

4. Is Berkeley's instrumentalist view of science defensible?
5. Does the rejection of corpuscularianism necessitate the rejection of Locke's primary/secondary quality distinction?
6. **EITHER** (a) Is Hume a sceptic? Discuss with regard to **either** the idea of cause and effect, **or** the existence of external bodies.  
**OR** (b) Did Kant answer Hume on causation?
7. Did Kant believe nature to have a purpose?
8. What distinguished Logical Positivism from other types of empiricism?
9. **EITHER** (a) How did twentieth-century French historians of science challenge the view that the sciences have shown continuous progress?  
**OR** (b) How did twentieth-century historians of science challenge the view of science as largely independent of its social settings?
10. **EITHER** (a) When, if ever, are historians of science entitled to use concepts and information that were not available to those they study?  
**OR** (b) Both Bachelard and Foucault developed histories of the sciences which were also inextricably philosophical. Is this a strength or a weakness?
11. Is the view that science evolves merely a metaphor?
12. Do portraits reveal the scientist's inner being like a window, or are they a mask to conceal what lies beneath?

**END OF PAPER**