UNIVERSITY OF CAMBRIDGE

NST2HP
Natural Sciences Tripos Part II: History and Philosophy of Science

Thursday 8 June 09.00–12.00

Paper 1

Early Science and Medicine

*You should answer four questions in total. Answer **one** question from Section A and **three** questions from Section B. All questions carry equal weighting.*

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 coversheet and on **each** bundle.*

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

SECTION A

1. How did the role of Ancient authors change in the shaping of medical and natural knowledge from the medieval to the early modern period?

2. How did first-hand experience contribute to the development of medical and natural knowledge before 1600?

3. How was medical knowledge gendered in the medieval and early modern periods?

SECTION B

4. ‘Astronomy is the oldest of the sciences, because of its reliance on instruments.’ Discuss.

5. Assess the influence of astrological ideas on views of health and medical practice in medieval Europe.

6. How did professional institutions of medicine develop in the medieval and early modern periods?

7. In the medieval and early modern period, what were the differences between physicians’ and patients’ definitions of health and illness?

8. What were the sites for performing experiments and observation in early modern anatomy?

9. What kinds of primary sources have historians of medicine found most fruitful for writing histories of the patient?

10. What influence did increased contact with America, Asia and Africa have on early modern European medicine?

11. Account for the rise of the early modern medical marketplace.

12. What was the role of popular printed works in disseminating medical knowledge?

END OF PAPER

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Monday 5 June 09.00–12.00

Paper 2

Sciences in Transition: Renaissance to Enlightenment

*You should answer four questions in total. Answer **one** question from Section A and **three** questions from Section B. All questions carry equal weighting.*

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SECTION A

1. What was the effect of natural theology on the development of natural knowledge in seventeenth and eighteenth-century Europe?

2. Did travel change natural knowledge between 1600 and 1800?

3. What was the greatest change in natural philosophy between 1600 and 1800?

SECTION B

4. Did increasing observational accuracy in the production of visual images revolutionise early modern studies of nature?

5. Why were early modern natural philosophers interested in occult qualities?

6. How did changing views of technology affect early modern natural philosophy?

7. What was the difference between a natural philosopher and an experimental philosopher in the seventeenth and eighteenth centuries?

8. Why did early modern naturalists exchange specimens?

9. Did Newtonianism change during the Enlightenment?

10. Was the eighteenth-century Industrial Revolution a major turning point in the historical development of science and society?

11. Why was classification of living beings controversial in the eighteenth century?

12. How did the institutions of natural history shape naturalists' practice and credibility in the late eighteenth century?

END OF PAPER

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Tuesday 13 June 09.00–12.00

Paper 3

Science, Medicine and Empire

*You should answer four questions in total. Answer **one** question from Section A and **three** questions from Section B. All questions carry equal weighting.*

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SECTION A

1. In what ways did gender and class shape medical and scientific careers in the nineteenth century?

2. Why did the establishment of universal standards become such an important feature of the sciences in the nineteenth century?

3. To what extent is the story of nineteenth-century science and medicine a story of knowledge made in Europe being spread to the rest of the world?

SECTION B

4. ‘In nineteenth-century medicine, the knowledge produced by hospitals was more important than that produced by laboratories.’ Assess this claim.

5. Why did so many Victorians believe that religion and science were at war?

6. In what ways was the debate over evolution a debate about empire?

7. How did miasmatic theories of disease shape the practice of public health in the nineteenth century?

8. ‘Know thyself.’ How did nineteenth-century anatomists act on this injunction, and with what effects?

9. What was ‘Humboldtian science’?

10. Why was Charles Darwin on the *Beagle*? What did he learn on the voyage?

11. Why was science so closely associated with ideas of progress in the nineteenth century?

12. What role did the senses play in the changing relations between physiology, physics and psychology from the mid-nineteenth through the early twentieth centuries?

END OF PAPER

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Natural Sciences Tripos Part II: History and Philosophy of Science

Wednesday 7 June 13.30–16.30

Paper 4

Science, Medicine and Technology since 1900

*You should answer four questions in total. Answer **one** question from Section A and **three** questions from Section B. All questions carry equal weighting.*

Begin each answer on a separate sheet.

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SECTION A

1. ‘Science and medicine were more political after World War II than they had been before.’ Assess this claim.

2. How has the relative importance of industry, academia and government in the development of technologies changed since 1900?

3. ‘The history of medicine since 1900 simply mirrors that of the sciences more generally.’ Assess this claim.

SECTION B

4. How, and with what effects, did the work of laboratory scientists make its way outside the laboratory in the period 1900–1945?

5. Discuss the significance of science and technology to ‘New Imperialism’ at the beginning of the twentieth century.

6. How did the creation of nuclear weapons change the sciences?

7. How were scientists and other technical experts involved in global economic development after World War II, and with what consequences?

8. ‘Instruments of social control.’ Is this a fair summary of twentieth-century innovations in genetic, genomic and reproductive medicine?

9. ‘Clinical trials in twentieth-century medicine left no room for physicians’ judgment, let alone the agency of patients.’ Assess this claim.

10. How did public health policies after 1950 reflect global Cold War tensions?

11. What resources were most important for the development of relativity physics in the early twentieth century?

12. Is the trajectory of science after 1945 best exemplified by the history of the particle accelerator, the satellite, or the computer?

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Natural Sciences Tripos Part II: History and Philosophy of Science

Tuesday 6 June 13.30–16.30

Paper 5

Philosophy of Science

*You should answer four questions in total. Answer **one** question from Section A and **three** questions from Section B. All questions carry equal weighting.*

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SECTION A

1. In virtue of what, if anything, is scientific knowledge more reliable than other forms of knowledge?

2. ‘In the world of science, there is physics. Everything else is just stamp collecting.’ Discuss.

3. ‘Scientists would be better at science if they knew more philosophy.’ Do you agree?

SECTION B

4. Can we make good causal inferences regarding the effectiveness of medical interventions from evidence other than comparative clinical studies in humans?

5. Is the programme of personalized medicine a compelling one?

6. In what sense, if any, has science made progress through reduction?

7. Does the truth of scientific theories explain their successes?

8. ‘There are no biological laws.’ Discuss.

9. ‘A scientific theory should be accepted if it fits the observational data.’ Discuss.

10. ‘The primary purpose of explanation is to provide understanding.’ Do you agree?

11. Is cognition best understood as localized in the brain?

12. Should cognitive scientists avoid referring to such mental states as beliefs and desires in their explanations of human behaviour?

END OF PAPER

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Natural Sciences Tripos Part II: History and Philosophy of Science

Saturday 10 June 09.00–12.00

Paper 6

Ethics and Politics of Science, Technology and Medicine

*You should answer four questions in total. Answer **one** question from Section A and **three** questions from Section B. All questions carry equal weighting.*

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SECTION A

1. Should scientific experts always be respected?

2. Should medicine be purely evidence-based?

3. Has the ideal of value freedom been important for science?

SECTION B

4. What does consent do in medical contexts?

5. How should we decide how to ration scarce healthcare resources?

6. Is rational choice theory a successful scientific theory?

7. What assumptions about values should economists make?

8. Is technological determinism a good way to characterize the role of technology in society?

9. Must a sociologist of science be a relativist?

10. Should the results of medical science be protected by intellectual property laws?

11. Have the climate sciences recently become captive to political activism?

12. Explain the significance of ‘the masses’ to scientific policy-making and research in the People’s Republic of China under Mao.

END OF PAPER