UNIVERSITY OF CAMBRIDGE

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

Monday 3 June 2019 09.00–12.00

Paper 1

Early History of Science, Medicine and Technology

*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 increased contact between Europe and other continents change European natural knowledge?

2. Whom would a well-to-do patient consult for a cure in the early modern period?

3. How did the Ancient tradition shape the development of science and medicine?

SECTION B

4. On what sources of information did ancient Greeks and Romans rely in treating scientific topics?

5. What was “medieval” about medieval medicine?

6. How was knowledge exchanged between Chinese and non-Chinese medical practitioners between 1300 and 1700?

7. How important was money in early modern medical encounters?

8. Discuss the role of women in early modern medical practice.

9. “The next care to be taken, in respect of the Senses, is a supplying of their infirmities with Instruments, and, as it were, the adding of artificial Organs to the natural; this in one of them has been of late years accomplisht with prodigious benefit to all sorts of useful knowledge, by the invention of Optical Glasses” (Robert Hooke, *Micrographia*). Discuss.

10. Why did natural philosophers in the seventeenth and eighteenth centuries perform experiments?

11. What was the significance of chemistry to the practice of medicine in the seventeenth and eighteenth centuries?

12. How do archival sources shape historians’ interpretations of the history of early medicine?

END OF PAPER

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Natural Sciences Tripos Part II: History and Philosophy of Science

Thursday 6 June 2019 09.00–12.00

Paper 2

Sciences and Empires (1780–present)

*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. “The name ‘Science and Empire’ is as unsatisfactory as it is Eurocentric” (Kapil Raj, 2007). Do you agree?

2. “The ways societies support science have changed since 1800, but their reasons for doing so have not.” Assess this claim.

3. What implications did the emergence of laboratories and disciplines in Northern Europe have for the history of science and technology in East Asia?

SECTION B

4. Samurai hung tablets with the solutions to geometry problems on the walls of Japanese temples in the eighteenth and nineteenth centuries. How did this reflect broader trends in knowledge exchange and production in the Tokugawa shogunate?

5. What problems and opportunities does the term “Humboldtian science” pose for the pursuit of a global history of science?

6. What was the relation between the public display of scientific knowledge and the production of scientific knowledge in nineteenth-century Britain?

7. Why did so many early debates about Charles Darwin’s *Origin of Species* focus on humans, a subject only briefly mentioned in the book?

8. What roles have the audiences for anthropology played in its development?

9. Did industrial scientists and academic scientists pursue the same goals in the early twentieth-century USA?

10. “Society does not a priori owe the scientist, even the good scientist, support, any more than it owes the artist or the writer or the musician support” (Alvin Weinberg, 1964). Why was this claim controversial?

11. How have colonisation and decolonisation affected anthropological fieldwork?

12. What does the history of Tsinghua University suggest about the relation between technocracy and socialism in the People's Republic of China?

END OF PAPER

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Natural Sciences Tripos Part II: History and Philosophy of Science

Tuesday 4 June 2019 09.00–12.00

Paper 3

Modern Medicine and Life Sciences (1780–present)

*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. “It makes no sense to write a history of ‘science and medicine’ because there have been so many different kinds of science.” Discuss.

2. How have changes in the way biology and medicine are patronised been reflected in how they are practised?

3. “It has made less difference whether medicine was practised in a hospital, a laboratory or in the community than in what historical period it was done.” Discuss.

SECTION B

4. What roles have men played in the history of reproductive technologies?

5. “Reductionism has been the driving ethos of twentieth-century biology.” Discuss.

6. To what degree has patenting helped or hindered biomedical science?

7. Was medicine a science or an art in the first two-thirds of the twentieth century?

8. “The term tropical medicine does not imply merely the treatment of tropical diseases. Rather, it implies a science of medicine and, more importantly, a medicine for the empire, where diseases were the great enemies of civilization.” Discuss.

9. Did medicine become militarised during World War II and stay militarised after it?

10. How did nineteenth-century doctors learn to see bodies in new ways?

11. How did the emergence of the germ theory of disease affect discourses of race and ethnicity?

12. What role did twentieth-century processes of decolonisation play in the history of global health?

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Monday 3 June 2019 09.00–12.00

Paper 4

Philosophy and Scientific Practice

*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 should philosophers of science learn from the plurality of science?

2. What is the function of experiments in the sciences? Discuss with reference to at least two cases from different sciences.

3. “If there are no causes in physics, there can be no causes in biology.” Discuss.

SECTION B

4. Is metaphysics conceptually prior to physics?

5. Does relativity theory tell us that future events already exist?

6. What are the most significant threats to objectivity in medical science and why?

7. Are economists right to base their discipline on rational choice modelling?

8. What, if any, normative assumptions are acceptable in welfare economics?

9. “The simplest explanation is the best explanation when accounting for the behaviour of nonhuman animals.” Do you agree?

10. Is personalised medicine possible?

11. “There are, I would submit, no laws in the strict sense about organisms, because organisms are vastly more complicated and idiosyncratic structures [than those the physicist deals with]” (J.J.C. Smart, 1963). Do you agree?

12. Is mechanistic evidence enough to warrant causal inferences about the effectiveness of interventions?

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

Wednesday 5 June 2019 09.00–12.00

Paper 5

Epistemology and Metaphysics 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. Is there useful work for general philosophy of science to do, or are all of philosophy's valuable contributions to be found in philosophy of specific sciences?

2. Do scientific theories provide knowledge of the unobservable world?

3. Is there a method that all scientists should follow?

SECTION B

4. Is the "no miracles argument" a persuasive argument for scientific realism?

5. Does Bas van Fraassen's epistemic voluntarism help with the defence of constructive empiricism?

6. "The knowledge that we get comes from one perspective or another, not from no perspective at all." What, if anything, is the significance of Ronald Giere's claim for the debate over scientific realism?

7. Is intertheoretic reduction possible and desirable?

8. "The best way to confirm a theory is to test it experimentally." Discuss.

9. "Scientific explanations are causal explanations." Discuss.

10. Does the possibility of Galilean idealisation require a commitment to the existence of capacities?

11. In virtue of what does a model represent its target system?

12. "Whether a generalisation is a law of nature depends on the agent who uses it." Discuss.

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

Friday 7 June 2019 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. Do values influence technological change in the same way they influence scientific change?

2. Colonial legacies are irrelevant to the ethical and political issues raised by science, technology and medicine. Discuss

3. What, if anything, would be wrong with technocracy?

SECTION B

4. Should we organise our approach to global warming around carbon or climate?

5. What was scientific about scientific management?

6. Are the values that commonly inform technological change the ones that should?

7. “Science is an elaboration of everyday operations – the home, the school, the shop, the bedside and the hospital present scientific problems as truly as does the laboratory” (John Dewey, 1938). What are the implications of this claim for sociological studies of scientific knowledge?

8. Does the sociology of scientific knowledge undermine the truth claims of science?

9. “The loss of one’s life is one of the greatest losses one can suffer. The loss of one’s life deprives one of all the experiences, activities, projects, and enjoyments that would otherwise have constituted one’s future” (Don Marquis, 1989). Does this explain what is wrong with abortion?

10. Explain the significance of the phrase “walking on two legs” to science policy in Maoist China.

11. Which aspects of scientific debate, if any, should be opened up to non-scientists?

12. “Consent is like a magic power which can make any impermissible action permissible.” Discuss with reference to medical research.

END OF PAPER