

NST2HP

Natural Sciences Tripos Part II: History and Philosophy of Science (2024)

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. You must not reuse portions of text from one answer in another answer.

You should spend no more than three hours on answering all the questions, and a word limit is set of no more than 1,500 words per answer.

All your answers for this paper should be submitted in one DOC, DOCX or PDF document. Each answer should be clearly headed with the question number and the question.

Put your Blind Grading Number (BGN) at the start of the document. Do not put your name anywhere in the document.

SECTION A

1. How important was Greco-Roman Antiquity for European understandings of the world after Columbus?
2. How did instruments change the development of natural knowledge production in early modern Europe?
3. How can a global history of early science meaningfully address non-European categories and traditions of systematic knowledge?

SECTION B

4. How did early modern Europeans account for the outbreak of “new” diseases?
5. How important was maritime travel in the making of modern science and/or medicine?

6. "Chymistry is key to understanding early modern natural knowledge." Discuss either from the perspective of medicine or from the perspective of science.
7. How did sixteenth-century images of nature function as objects of knowledge?
8. What was the role of prayer and religious contemplation in scientific and/or medical practice?
9. Is the marketplace the best model to describe early modern transactions of medical and/or scientific knowledge?
10. Why did publications about the natural world in China proliferate in the late Ming period?
11. What spaces were open for women in the pursuit of science and/or medicine in the seventeenth and eighteenth centuries?
12. To what extent was the knowledge of nature developed by "Enlightenment" natural philosophers Eurocentric?

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Paper 2: Sciences and Empires

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SECTION A

1. To what extent did disciplinary specialisation define modern science?
2. What are the limits, if any, of “Sciences and Empires” as a way of framing the global history of science?
3. Discuss the significance of non-professional science in the history of science since 1850.

SECTION B

4. “Early nineteenth-century London witnessed a revolution in the sciences” (Morus, Schaffer and Secord, 1992). Do you agree?
5. How did knowledge about the natural world enable the Jesuits to maintain a presence in China during the early Qing dynasty?
6. Discuss the relationships between science and society in South Asia during the nineteenth **OR** twentieth century.

7. Should we think of modern physics as essentially a laboratory rather than an imperial science?
8. Assess James Scott's concept of "seeing like a state" as a framework for understanding science and social planning in the twentieth century.
9. Assess the legacy of the 1930s and 1940s for science and technology in postwar Japan.
10. Did India "need" science and technology after the end of British rule?
11. Are historians like Mahoney and Haigh correct to think you cannot tell a single coherent narrative about the history of computing?
12. What roles have the acknowledgement of indigenous voices played in the development of anthropology?

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Paper 3: Modern Medicine and Life Sciences

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SECTION A

1. How did communication between practitioners and lay audiences shape modern medicine and the life sciences?
2. What implications did the militarisation of industrial societies and the experience of war have for the history of modern medicine?
3. How did colonialism shape the development of medicine and the life sciences?

SECTION B

4. French philosopher Gaston Bachelard coined the term “factory-laboratory” to refer to nineteenth-century sites of physiological research. Does this term help us in understanding the history of modern biology?
5. Why did certain laboratory species become model organisms in the twentieth century?
6. Why and how did hospitals become “temples of modern medicine”?

7. How, and to what extent, had “medicine been reinvented as a profession suitable for respectable women” by World War One?
8. “The early history of X-rays demonstrates that to understand the medical use of a machine, even one that from today’s perspective seems to have such obvious utility, one must study more than simply the medical applications of the device” (Joel D. Howell). Discuss.
9. In what ways did links between medicine, business and industry change the treatment of disease between 1900 and 1950?
10. “We will no longer tolerate intimidation by white-coated gods, antiseptically directing our lives” (Washington Women’s Liberation, 1970). What difference did social movements make to medicine between the 1960s and 1980s?
11. What was social medicine, and how did it influence the history of international health?
12. Does the concept of “race” play the same role in contemporary genomic medicine as it did in eighteenth-century medicine?

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Paper 4: Philosophy and Scientific Practice

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SECTION A

1. "Different sciences are held together by a common commitment." Are they? If so, what commitment? If not, so what?
2. What differences are there, if any, between scientific concepts and everyday "folk" concepts?
3. Do some sciences need philosophy more than others?

SECTION B

4. Is Cost Benefit Analysis pure science or pure politics?
5. Present the best possible case in favour of the model-building strategy of economics. Does it work?
6. Are there such things as diseases and does it matter?

7. What are the limits to extrapolating from clinical trials? Can they be overcome?
8. Is there a way to define “the climate” which isn’t subjective?
9. “The direction of time just is the direction of increasing entropy.” Discuss.
10. Is the “Extreme Male Brain” theory of autism tenable?
11. Is there any hope of solving the hard problem of consciousness?
12. Must mental disorders be “globalizable”?

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Paper 5: Epistemology and Metaphysics of Science

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SECTION A

1. Why trust science?
2. Must metaphysics be constrained by scientific practice?
3. Are laws of nature required for scientific explanation?

SECTION B

4. How does perspectivism compare with van Fraassen's empirical stance?
5. Do non-empirical virtues solve the problem of underdetermination?
6. Is structural realism really "the best of both worlds"?
7. Explain how one theory can help another theory without reduction.
8. Has inter-theoretic reduction enhanced the unity of science?

9. What is methodology according to the pragmatists?
10. "All probabilities are epistemic." Discuss.
11. What sort of subjectivity, if any, is admissible in an account of laws of nature?
12. What is required for a successful philosophical account of explanation?

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Paper 6: Ethics and Politics of Science, Technology and Medicine

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SECTION A

1. Can science be pure?
2. Would there be anything wrong with putting scientists in charge of political decision-making?
3. When, why and how should the public be involved with scientific research?

SECTION B

4. "We can't avoid influencing people's health-related decisions; therefore, we ought to nudge them into making healthy decisions". Is this a good argument?
5. When, if ever, should we use the concept of "race" in biomedical research?
6. Does the problem of inductive risk show that science cannot be objective?
7. What is the symmetry principle? Would you endorse it?

8. How useful is the concept of the “Iron Curtain” for understanding the history of science and technology in the Cold War?
9. Have debates about climate changed fundamentally over the last 70 years?
10. “Since we cannot know whether AI is conscious, we ought to act on the assumption it is.” Discuss.
11. Compare and contrast issues in gaining informed consent to screening and gaining informed consent to psychiatric interventions. Are there any fundamental differences?
12. Can we ever justify compulsory treatment for psychiatric disorders?

END OF PAPER