Exam History of Science

Date: Tuesday March 29, 2022	Lecturer: dr. D.J. Beckers
Time: 15:30 – 17:45u	Course code: FEW X 400652

In general:

1. Make sure your name and student number are on ALL your work.
2. Answer in English sentences. Spelling and grammar should be correct, either to the English or to the US standards. Just a few buzzwords never constitute an answer. Always explain yourself. Use appropriate examples to illustrate your answer.
3. This exam consists of 12 A-questions and 8 B-questions. The A-questions are about the lectures and the syllabus. The B-questions require you to reflect.
4. If you're entitled to a bonus, you pick eight questions: 5 A-questions and 3 B-questions.
5. If you're *not* entitled to a bonus point, you pick 5 A-questions, answer question B-1 *and* pick three other B-questions.
6. Each question is worth 1 point (or nothing!). Indicate clearly which questions you're answering by mentioning either the number and / or the title of the question in your answer. If you answer more than required, only the first answers will be considered.

A-questions

1. Ancient cultures
To what extent did ancient cultures contribute to mathematical practices?

2. Arab numbers
Why were Arab (Indian, if you prefer) numerals not immediately successful in medieval Europe?

3. Newton
In what ways did Newton contribute to the universality of mathesis?

4. Linnaean system
To what extent was the Linnaean system an Enlightenment mathematical idea?

5. Nation state
Describe two ways in which mathematicians contributed in the formation of nation states.

6. Professionalization
How can the growing reliance of governments on census data be connected to the professionalization of mathematics?

7. Hilbert
David Hilbert may be regarded as exemplifying several developments in mathematics in the second half of the nineteenth century. Explain that statement.

8. Applying mathematics
What conception of the application of mathematics changed fundamentally in the 20th century?

9. New Math
Did the “New Math” educational ideals introduce pure mathematics as an intrinsic part of mathematics education?

10. Computing
In what ways did the late twentieth century rise of electronic computing change mathematics?

11. Weapons of math destruction
In what sense did Cathy O'Neil illustrate that mathematics might be dangerous, and should be used with caution?

12. Systems thinking
To what extent was systems thinking a radically new late twentieth-century idea? To what extent was it a mathematical idea?

B-questions:

1. Probability theory
Probability theory wasn't always a part of mathematics. Describe the 17th/18th century change in the attribution of the subject, and discuss social / economical changes that contributed to that change.

2. Mathematical practices
Does the concept of “mathematical practices” help to grasp the rising importance of mathematical thinking in present-day culture?

3. Business analyst / mathematician
Should we regard Charles Babbage as a business analyst or as a mathematician?

4. Statistics
Can statistics be considered a mathematical practice?

5. Metric system
How useful is the metric system?

6. Internationalism
Were international organisations, such as IFIP, IMU and UNESCO, furthering international standards in mathematical thinking in the post World War II world?

7. Mathematics education
Pure mathematics exists by the grace of mathematics education. Reflect on that statement.

8. Relationship
In what way does the university training of business analysts influence the future profession of the business analyst?