Exam History of Science

Date: Monday June 3, 2019	Lecturer: dr. D.J. Beckers
Time: 18:30 – 20:30u	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 texts. The B-questions require you to reflect on the information from the lectures and texts, and / or information you might know from other sources.
4. You pick eight questions: 5 A-questions and 3 B-questions. 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 five A-questions, only the first five will be considered. Likewise for the B-questions.

A-questions

1. Hippocrates
Explain Hippocrates' attempt to square his “moons”. Why was this interesting in his days?

2. Euclidean algorithm
To what extent are theorems VII.1 and VII.2 from Euclid's Elements similar to our present-day notion of the Euclidean algoritm?

3. Merchant arithmetic
To what extent would you call the early 13th century merchant and banking manuscripts on arithmetic a part of the history of business analytics?

4. Mapping the world
Changes in the status of mathematics may be illustrated by changes in the production of world maps. Explain this statement.

5. Napier's logarithms
How did Napier introduce his logarithms. Why did he do it that way?

6. Huygens
Explain how Huygens could write a book on chance, without using the notion of chance, nor calculating one. Why did he do it in that way?

7. Versailles gardens
Explain to what extent the Versailles gardens illustrate the mathematical spirit of its time. What was considered mathematical about it? Mention at least two things.

8. Bernal's paradox
Explain Bernal's paradox. How is the paradox resolved?

9. Abel
Explain how Abel's “exception” illustrates a changing idea about rigor in proof.

10. Statistics
Describe the rise of statistics in agriculture in The Netherlands in the early twentieth century. Pay attention to institutional and social factors that favored statistics. What was the difference with the colonial situation?

11. Nijenrode Business School
Business analytics in The Netherlands truly rose with the founding of Nijenrode Business school in 1946. Explain that statement.

12. Computer mathematics
To what extent was the rise of experimental mathematics facilitated by computers, according to Sørensen?

B-questions:

1. Exhaustion method
Reflect on the Archimedean method for determining the volume of the sphere as a form of calculus.

2. Purification
Purification of mathematics in the early nineteenth century is what made mathematics the subject that it is today. Reflect on that statement.

3. Models in mathematics
Is modeling an intrinsically modern thing in mathematics?

4. Statistics
Why should we learn statistics?

5. Dutch healthcare
During the lecture, it was argued that Dutch healthcare policy was influenced by data analysis. In what sense is statistics supportive of that new view on how to finance healthcare?

6. Spreadsheets
Is it a prerequisite to be able to calculate yourself (by hand) before you can use spreadsheets in a meaningful way?

7. Mathematical meaning
Mathematics wasn't always valued in the same way as it is today. Describe one of the changes in valuation of mathematics and describe the social forces behind that change.

8. Business Analytics
In what sense can Business Analytics be considered influential in western society?