I. **Six sentences have been removed from the text. Choose the most suitable sentence from the list A – F for each point 1 – 6.**

The German Gottfried Wilhelm Leibniz occupies a grand place in the history of philosophy. He was, along with René Descartes and Baruch Spinoza, one of the three great 17th century rationalists, and his work anticipated modern logic and analytic philosophy. (1) ………. But, between his work on philosophy and logic and his day job as a politician and representative of the Royal House of Hanover, Leibniz still found time to work on mathematics. He was perhaps the first to explicitly employ the mathematical notion of a function to denote geometric concepts derived from a curve, and he developed a system of infinitesimal calculus, independently of his contemporary Sir Isaac Newton. (2) ………. Like Newton, Leibniz was a member of the Royal Society in London, and was almost certainly aware of Newton's work on calculus. During the 1670s (slightly later than Newton's early work), Leibniz developed a very similar theory of calculus, apparently completely independently. (3) ……….

Unlike Newton, however, he was more than happy to publish his work, and so Europe first heard about calculus from Leibniz in 1684, and not from Newton (who published nothing on the subject until 1693). (4) ……….However, the Royal Society, by then under the rather biased presidency of Newton himself, later also accused Leibniz of plagiarism, a slur from which Leibniz never really recovered.

In addition to calculus, Leibniz re-discovered a method of arranging linear equations into an array, now called a matrix, which could then be manipulated to find a solution. (5)……… Leibniz paved the way for later work on matrices and linear algebra by Carl Friedrich Gauss. He also introduced notions of self-similarity and the principle of continuity which foreshadowed an area of mathematics which would come to be called topology.

During the 1670s, Leibniz worked on the invention of a practical calculating machine, which used the binary system and was capable of multiplying, dividing and even extracting roots, a great improvement on Pascal's rudimentary adding machine and a true forerunner of the computer. (6) ……….. Because of the ability of binary to be represented by the two phases "on" and "off", it would later become the foundation of virtually all modern computer systems, and Leibniz's documentation was essential in the development process.

A. He also revived the ancient method of solving equations using matrices, invented a practical calculating machine and pioneered the use of the binary system.

B. When the Royal Society was asked to adjudicate between the rival claims of the two men over the development of the theory of calculus, they gave credit for the first discovery to Newton, and credit for the first publication to Leibniz.

C. He is usually credited with the early development of the binary number system (base 2 counting, using only the digits 0 and 1), although he himself was aware of similar ideas dating back to the I Ching of Ancient China.

D. Like many great thinkers before and after him, Leibniz was a child prodigy and a contributor in many different fields of endeavour.

E. Within the short period of about two months he had developed a complete theory of differential calculus and integral calculus.

F. A similar method had been pioneered by Chinese mathematicians almost two millennia earlier, but had long fallen into disuse.

Vocabulary:

anticipate – przewidywać

explicitly – wyraźnie

employ – zastosować

denote – oznaczać

derived (from) – wyprowadzony (z), pochodny

curve – krzywa

infinitesimal calculus (*plural* calculi)- rachunek różniczkowy i całkowy

biased – stronniczy

plagiarism – plagiat

slur – oszczerstwo

linear equation – równanie liniowe

arrange – układać, porządkować

array – układ, szyk

solution – rozwiązanie

matrix (*plural* matrices) – macierz

pave the way – utorować drogę

self-similarity – samopodobieństwo

continuity – ciągłość

foreshadow – być zapowiedzią

binary – dwójkowy

multiply- mnożyć

add - dodawać

divide – dzielić

root – pierwiastek

extract – wyciągać

notion - pojęcie

rudimentary – elementarny, podstawowy

forerunner – prekursor

revive – odrodzić

give sb credit for sth – docenić kogoś za coś

credit sb with sth – przypisywać coś komuś

adjudicate – rozstrzygnąć (spór)

child prodigy – cudowne dziecko, młodociany geniusz

endeavour – przedsięwzięcie

differential calculus – rachunek różniczkowy

integral calculus – rachunek całkowy

digit – cyfra

II. Answer the following questions in complete English sentences.

1. What century did Gottfried Wilhelm Leibniz live in?
2. Where did he come from?
3. What is Leibniz's contribution to mathematics?
4. Did Leibniz and Newton cooperate with each other when they were developing calculus?
5. Who was the first to publish his results?
6. Who was accused of plagiarism and why?
7. Who was given credit for the first discovery of the theory of calculus?
8. What is a matrix?
9. What areas of mathematics did Leibniz pave the way for?
10. What is the binary number system?
11. What machine did Leibniz invent?

12. What operations could the machine perform?
13. Whose calculating machine was more advanced - Lebniz's or Pascal's?
14. What is Leibniz's contribution to the development of a computer system?

III. Form verb – noun collocations. Translate the collocations into Polish.

Verb	Noun
1. to denote	a) credit (for sth)
2. to accuse (of)	b) disuse
3. to arrange	c) equations
4. to find	d) a solution
5. to pave	e) concepts
6. to extract	f) linear equations
7. to solve	g) plagiarism
8. to invent	h) operations
9. to give	i) a calculating machine
10. to develop	j) a root
11. to fall (into)	k) a theory
12. to perform	l) the way

1. ….. 2. ….. 3. …. 4. …. 5. …. 6. …. 7. ….. 8. ….. 9. ..... 10. …. 11. …..12……

IV. Form all possible adjective - noun collocations and translate them into Polish.

Adjective	Noun
1. integral	a) machine
2. differential	b) system
3. linear	c) knowledge
4. binary	d) calculus
5. calculating	e) concept
6. infinitesimal	f) equation
7. adding	g) notion
8. mathematical	h) algebra
9. geometric	
10. rudimentary	

1. ……. 2. …….. 3. …….. 4. …….. 5. …….. 6. …… 7. ….. 8. ….. 9. …… 10. ……..

V. Fill in the blanks with the correct prepositions.

1. Newton accused Leibniz ………. plagiarism.

2. Leibniz developed infinitesimal calculus independently…….. Newton.

3. Leibniz is credited ……… the development of the binary number system.

4. Leibniz was aware ……. Newton's work …….. calculus.

5. Leibniz's calculating machine was capable ……… multiplying, dividing and extracting roots.

6. The Royal Society was asked to adjudicate ……………… the rivals.

7. They gave credit …….. the first discovery ……… calculus ……….. Newton.

8. What is Leibniz famous …….. ?

9. He was involved …….. politics.

10. The method invented by Chinese mathematicians had fallen ……… disuse.

11. The method of solving equations using matrices dates ……… to ancient times.

12. Leibniz re-discovered a method of arranging linear equations …….. a matrix.

The text about Gottfried Wilhelm Leibniz was adapted from:

http://www.storyofmathematics.com/17th_leibniz.html