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— **TUITION** —

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BIOLOGY

THE CONTROL OF GENE EXPRESSION

Level & Board	AQA (A-LEVEL)
TOPIC:	GENOME PROJECTS
PAPER TYPE:	QUESTION PAPER - 1
TOTAL QUESTIONS	6
TOTAL MARKS	46

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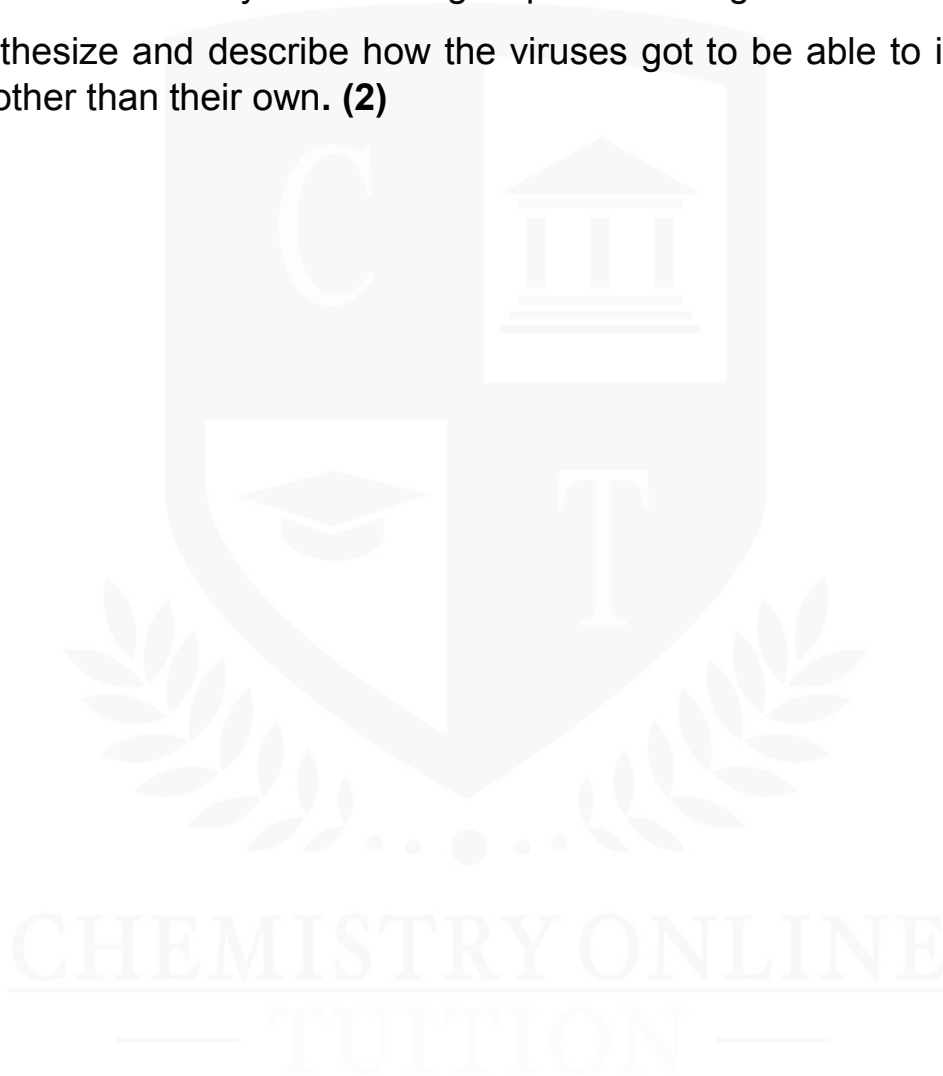
Genome Projects - 1

1.

Numerous species of frogs have been affected by viruses in Europe. All of the viruses are members of the Ranavirus family and are closely related.

The viruses used to only infect a single species of frog.

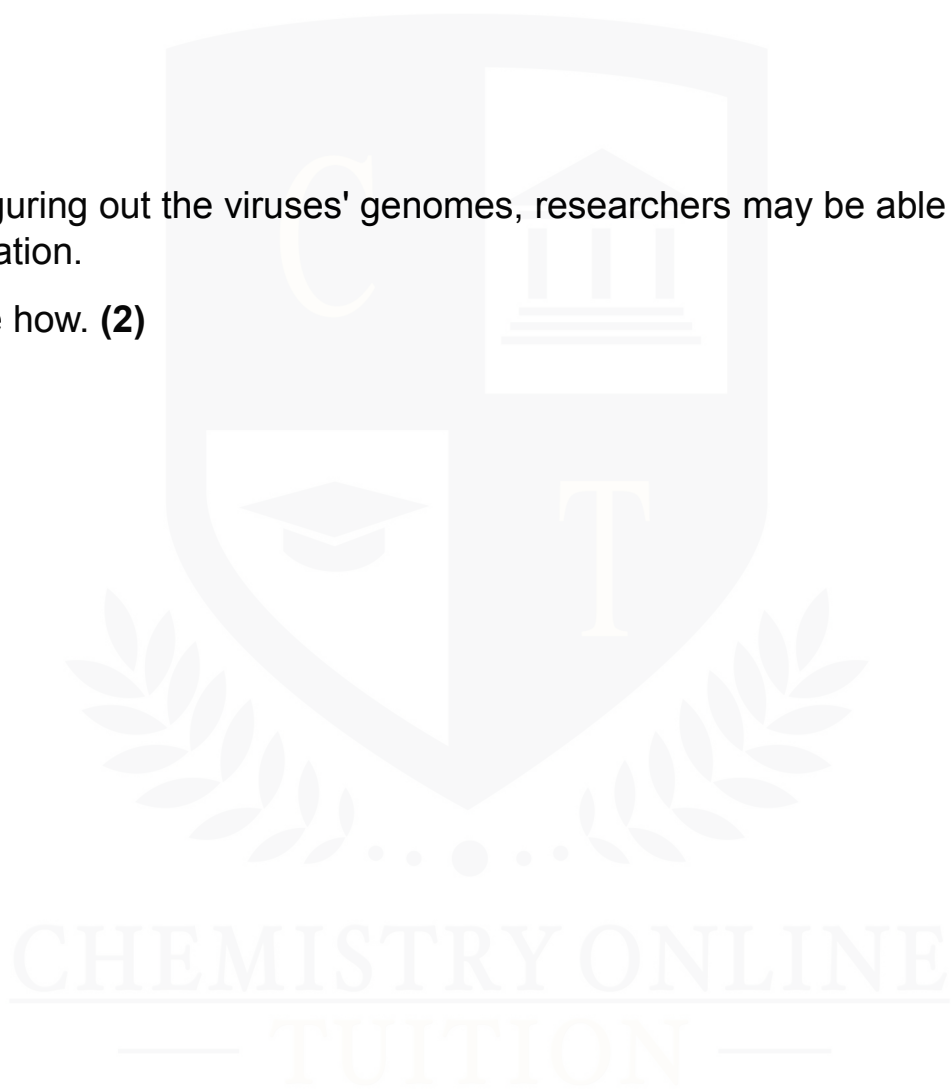
(a) Hypothesize and describe how the viruses got to be able to infect frog species other than their own. **(2)**



(b) Identify the two methods that the researchers might have employed to analyze the viral DNA and establish the close relationship between the viruses. **(2)**

(c) By figuring out the viruses' genomes, researchers may be able to create a vaccination.

Describe how. **(2)**



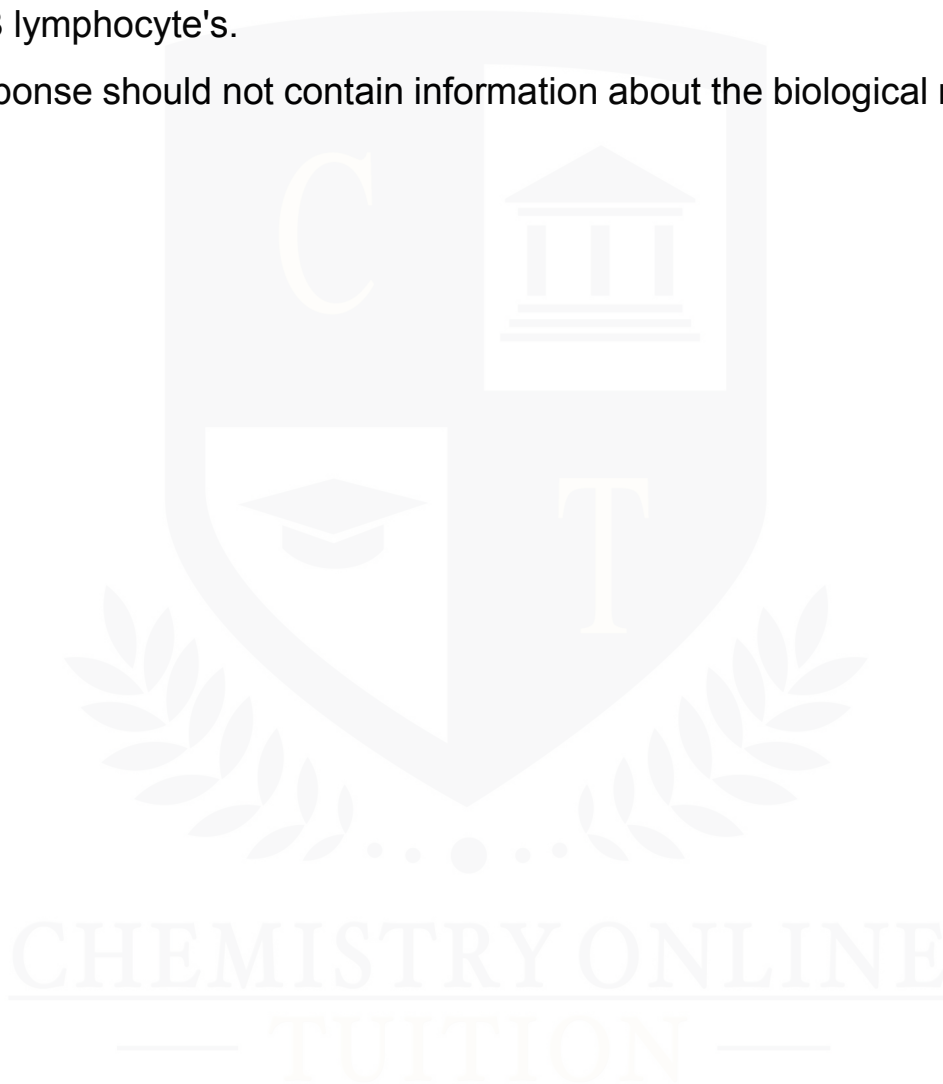
2.

(a) Describe the reaction that a frog's B cells might have to a ranavirus immunization.

It is reasonable to believe that a frog's B lymphocytes react similarly to a human B lymphocyte's.

Your response should not contain information about the biological response.

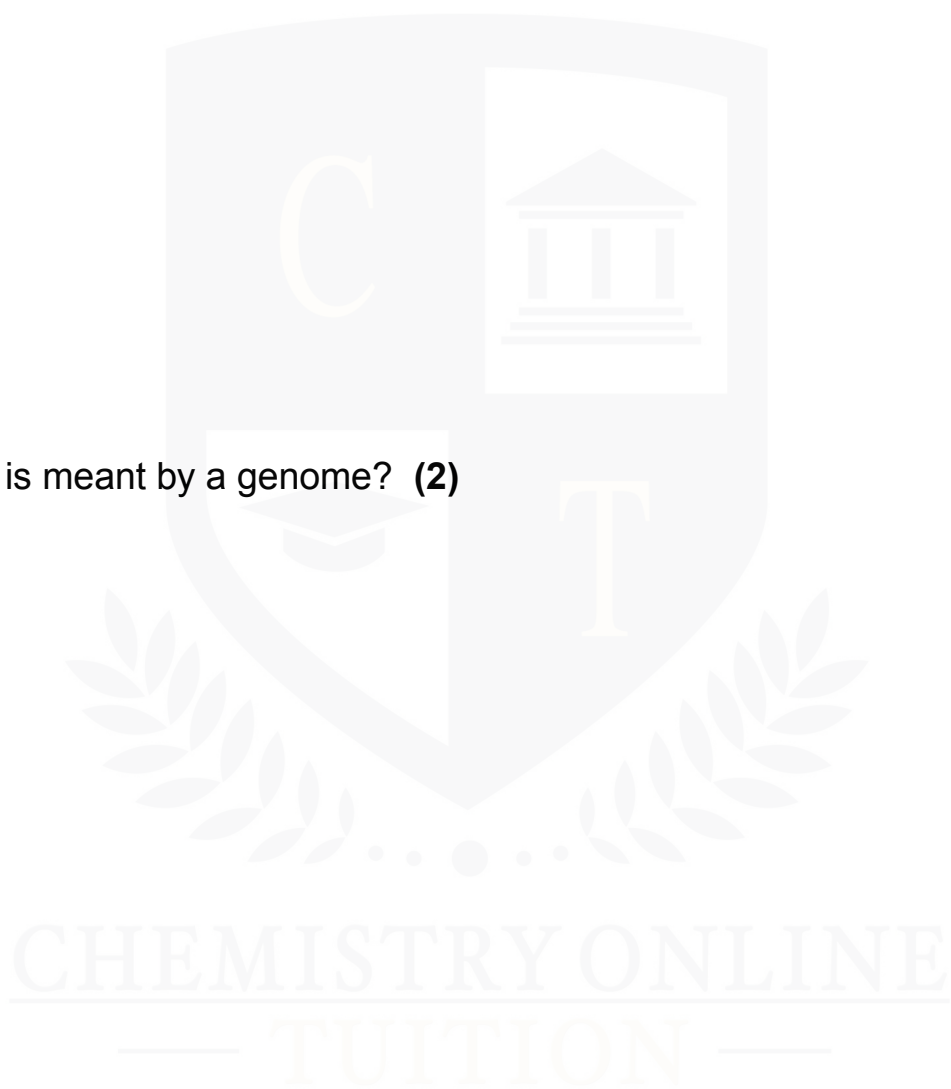
(3)



(b) What is the genetic code? **(2)**

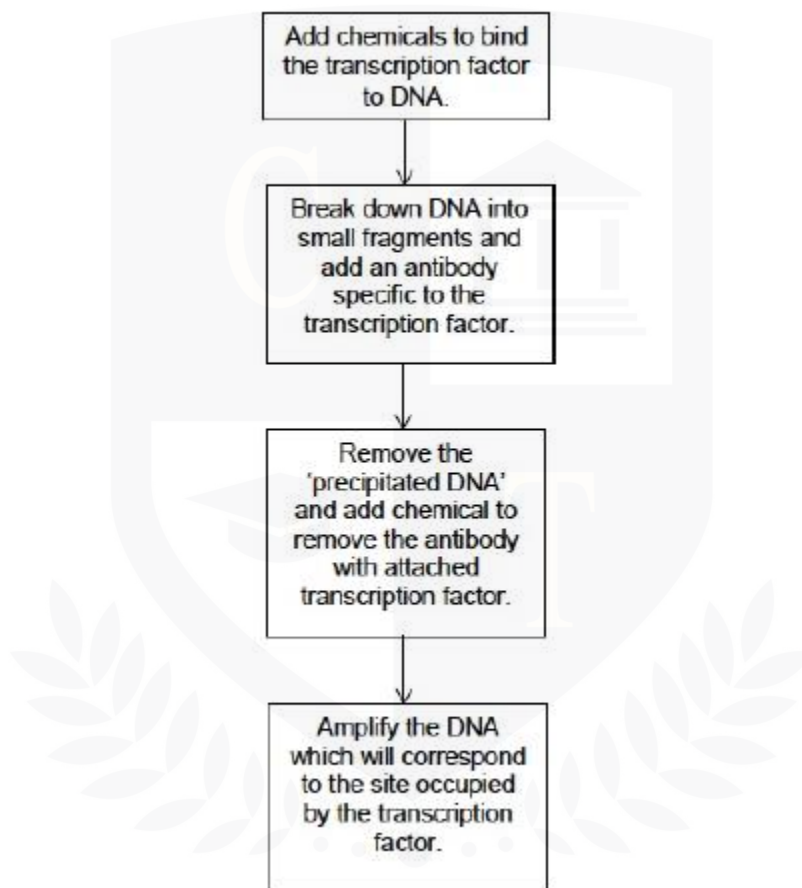
3.

(a) What is meant by a genome? (2)



4.

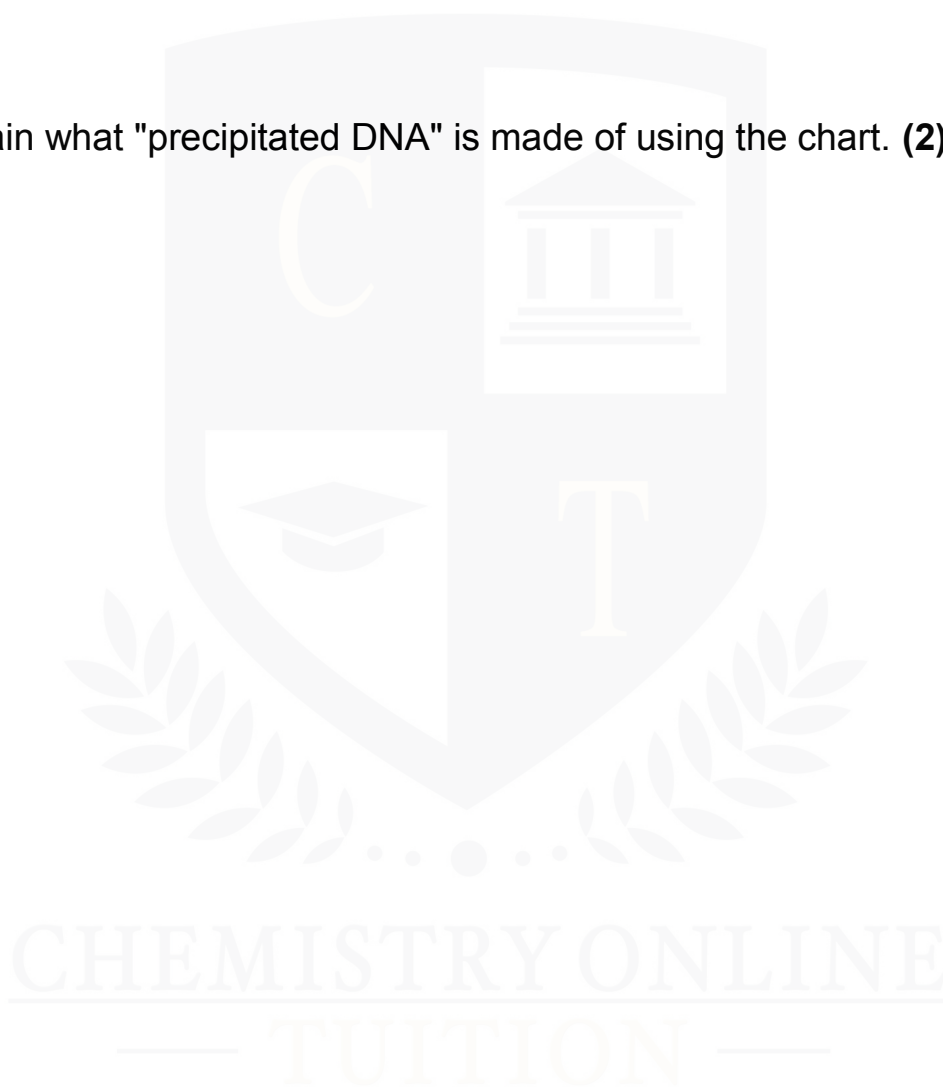
One technique to find the location on DNA where a transcription factor binds is chromatin immunoprecipitation. The chart illustrates the basic idea underlying this process.



(a) Describe the process by which the transcription factor and antibody bind.

(2)

(b) Explain what "precipitated DNA" is made of using the chart. **(2)**



5.

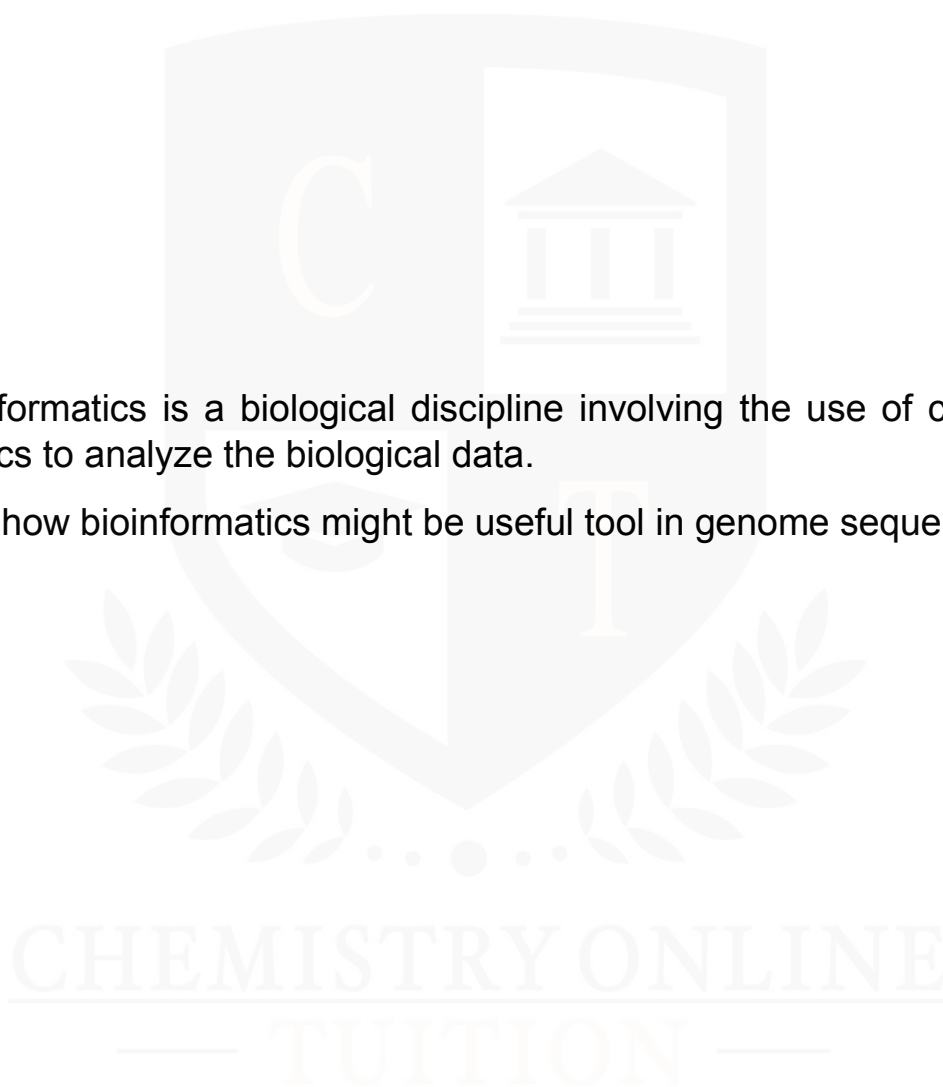
(a) The human genome project completed the challenge of sequencing the entire human genome in 2003.

Suggest any two benefits of developing a complete map of human genome.

(2)

(b) bioinformatics is a biological discipline involving the use of computers and statistics to analyze the biological data.

Suggest how bioinformatics might be useful tool in genome sequencing. **(2)**



6.

Your essay should be written in a continuous prose style.

You will be graded on the correctness of science in your essay.

Along with the quality of your written communication, it will be graded based on how well you choose pertinent information from various sections of the specification.

The most points that can be given out are:

Scientific	16
Breadth of knowledge	3
Relevance	3
Quality of written communication	3

(a) Write a paper on the following subject: Technology and Science Using DNA. **(25)**

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