

Q1.

In Europe, viruses have infected a large number of frogs of different species. The viruses are closely related and all belong to the Ranavirus group.

Previously, the viruses infected only one species of frog.

- (a) Suggest and explain how the viruses became able to infect other species of frog.

(2)

- (b) Name **two** techniques the scientists may have used when analysing viral DNA to determine that the viruses were closely related.

1 _____

2 _____

(1)

- (c) Determining the genome of the viruses could allow scientists to develop a vaccine.

Explain how.

(2)

- (d) Describe how the B lymphocytes of a frog would respond to vaccination against Ranavirus.

You can assume that the B lymphocytes of a frog respond in the same way as B lymphocytes of a human.

Do **not** include details of the cellular response in your answer.

(3)

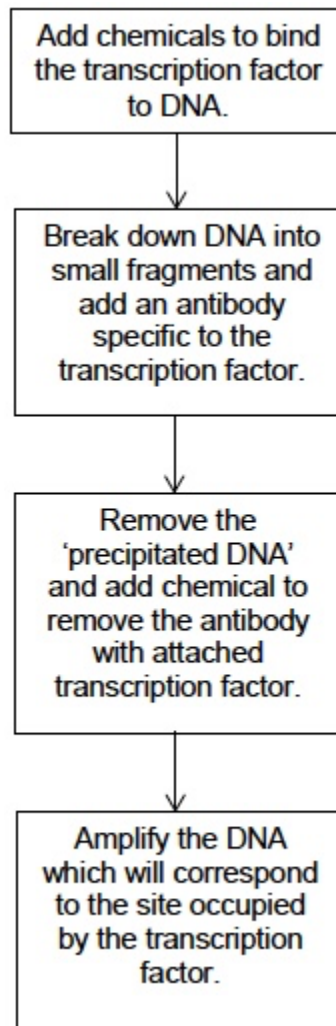
(Total 8 marks)

Q2.

(a) What is meant by a genome?

(1)

Chromatin immunoprecipitation is one method to determine where a transcription factor binds to DNA. The principle behind this procedure is shown in the chart.



(b) Explain why the antibody binds to the transcription factor.

(2)

(c) Use the chart to explain what 'precipitated DNA' consists of.

(1)