

2001 HIGHER SCHOOL CERTIFICATE EXAMINATION

Biology

Section I – Part B (continued)

Marks

Question 22 (6 marks)

- (a) Cloning is a technique that could be used to increase numbers in an endangered species. What effect would cloning have on the genetic diversity of the species? 2

It would eliminate variation and the species would be the same. There would not be any differences in their species.

- (b) Explain TWO possible evolutionary effects of a disease entering an endangered population containing some cloned individuals. 4

The cloned individuals will either have a the same gene that is susceptible to the disease or one that is resistant. If it is susceptible then they would all die, but if they have the resilient gene, they will survive and multiply and their offspring will be resilient and so on.

Marks

Question 23 (3 marks)

In twelfth-century China, people seeking protection from smallpox removed scabs from people mildly scarred from the disease. These scabs were then ground and inhaled as powder. Similarly, in the seventeenth century, an Englishwoman, Mary Montagu, injected bits of smallpox scabs into healthy children to protect them from the disease.

3

In the light of our current knowledge about the immune response, explain why these practices were successful.

In very small amounts, the immune system is able to fight the disease and build a defense against it. ~~It will kill the virus.~~ Memory cells will carry this information and the body becomes immune to the disease. When the body is next infected, it will have an immediate response and kill off the disease.

Question 24 (4 marks)

Explain the relationship between the cause and ONE symptom of ONE named non-infectious disease. *Environmental disease*

4

Scurvy - cause: Lack of vitamin C in their diet. Occurred in people who could not obtain fresh food.

Symptom = Loose teeth