

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

Over time cloning would decrease the natural variability and diversity of the species. They would all be the same with no variation.

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

- If a disease enters an endangered population with cloned individuals it has the potential to kill all the clones as there is no variability in their genes.
- The clones could survive and the others die, therefore only cloned animals would be left, resulting in decreased variation.

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.

These practices were successful because the smallpox scabs are weakened, dead or a strain of the antigen/eg the virus small pox. This sets off the T memory cells (that record the original antigen). This prevents the disease as the <sup>body</sup> immune recognises the antigen and <sup>or</sup> triggers/initiates an immune response

Question 24 (4 marks)

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

4

Down Syndrome is a non-infectious inherited disease. The cause of the disease is the extra chromosome making it 3 chromosomes instead of a pair in the number 21 chromosome. This means that the normal number of chromosomes is not 46 but now 47. The symptom relating to the Down Syndrome disease is the disability in learning, which is affected, so special schools are required