

## **GCSE Biology A (Gateway)**

**J247/04 Biology A B4-B6 and B7 (Higher Tier)**

**Question Set: 14**

1 Methamphetamine is a drug.

Scientists are investigating the use of antibodies as a treatment to control the negative effects of the drug.

(a) What is an antibody?

A protein molecule made by the immune system to kill pathogens.

[2]

(b) As the human body does not naturally make antibodies against methamphetamine, scientists are using mice to make antibodies.

Describe how large amounts of the antibodies can be made using monoclonal antibody techniques.

Inject methamphetamine into mice and collect the lymphocytes  
Fuse lymphocytes with tumour cells. This will make  
hybridoma cells which make antibodies against  
methamphetamine. [4]

(c) These antibodies would not work against other

drugs. Explain why.

Antibodies are specific to only one antigen.

[2]

**Total Marks for Question Set 14: 8**

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