

AQA, OCR, Edexcel

A Level

A Level Biology

**Immunity and Vaccines
Questions**

Name:

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Total Marks: /36

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Immunity and Vaccines

Our bodies naturally become immune to an infection after it has been exposed to the specific pathogen, undergone an immune response, created appropriate memory cells and recovered. This means that the body is protected from the symptoms of future infections. Additionally, vaccines are given to artificially stimulate the immune system to create memory cells to protect the body from a secondary infection without having to suffer from the symptoms in the first instance.

1. Immunity can be passive or active. Vaccinations are an example of active immunity.

a)

i) What is meant by the term active immunity? (2 marks)

ii) How does passive immunity differ from active immunity? As part of your answer identify an example of passive immunity? (4 marks)

b) Vaccinations protect both individuals and whole populations from diseases.

i) What is a vaccine? (1 mark)

ii) How can vaccines protect the population as a whole? (3 marks)

2. Vaccines only work to protect against the specific antigen that was injected into the body.

i) What is meant by the term antigenic variation? (2 marks)

ii) An individual was vaccinated against the virus influenza. Explain why three months later the individual was suffering from the flu? (3 marks)

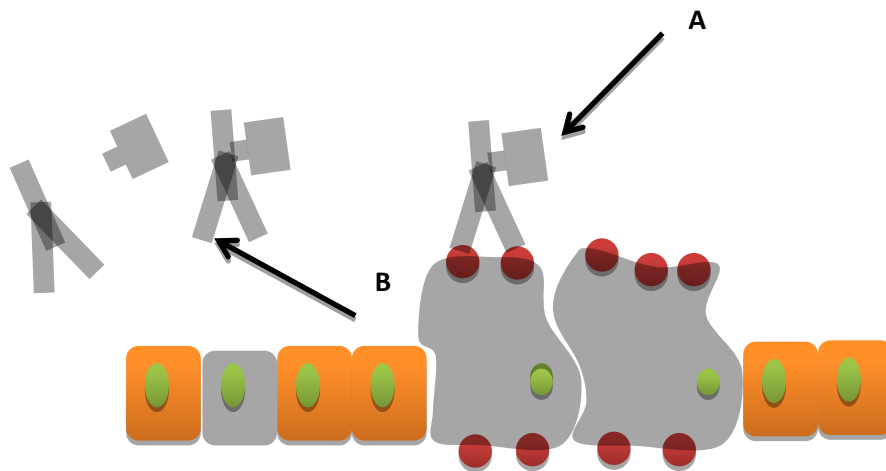
b) Antibodies can also be used to diagnose and treat a range of medical conditions.

i) What are monoclonal antibodies? (2 marks)

c) One important use of monoclonal antibodies is to target drug treatments directly to cancerous cells. Trastuzumab is a cancer drug used to treat stomach and breast cancer.

i) Using the diagram, identify what parts the arrows labelled A and B are pointing to. (2 marks)

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ii) How does the drug target cancerous cell? (1 mark)

iii) Why is the use of monoclonal antibodies advantageous in the treatment of certain cancers as opposed to more general therapy? (2 marks)