



QUESTION WORKBOOK

Antibodies, vaccination and the four kinds of immunity

Pathogens, disease and immunity · Unit B11

AQA 3.2.4 · OCR A 4.1.1 · Edexcel A Topic 6.7 · CAIE 11.2

7 questions · 24 marks

NAVY SCREEN EDITION

SECTION A · Short, 1 to 2 marks

- A1** A baby receives antibodies in its mother's breast milk. A child of five is given the MMR vaccine. Identify the type of immunity produced in each case, naming both axes of the classification. [2]

SECTION B · Standard, 3 to 5 marks

- B1** An antibody has no enzymic activity of any kind. Explain how antibodies nevertheless help to clear a bacterial infection. [4]

- B2** Compare active immunity with passive immunity, referring to how each arises, how quickly it acts and how long it lasts. [4]

B3 An ELISA test for HIV detects antibodies against the virus rather than the virus itself. Suggest why a person infected two weeks ago may still test negative, and suggest what follows for the screening of donated blood. [4]

B4 A new vaccine is trialled during an epidemic, with one group given the vaccine and a control group given a placebo. Evaluate the use of a placebo control group in a trial of this kind. [4]

B5 A virus has a basic reproduction number R_0 of 12 in a fully susceptible population. Calculate the percentage of that population which must be immune before transmission is no longer sustained. [3]

B6 Explain why the influenza vaccine has to be reformulated every year while the measles vaccine does not.

[3]
