OCR AS/A-level Year 1 Biology A exam practice answers

**11 Communicable diseases, disease prevention and the immune system**

**1** The correct answer is row B. [1]

**2 (a)** Through unprotected sexual intercourse; through using unsterilised and infected surgical equipment; through sharing needles during drug abuse. [3]

 **(b) (i)** In most areas, the percentage of people with new infections has risen from 1980 to 2010. The greatest rise is in sub-Saharan Africa — from 0.0% in 1980 to 15.2% in 2010. In Western Europe the percentage of new infections fell between 2000 and 2010. [4]

 **(ii)** Western Europe is more developed, with better primary healthcare and better education to teach people about HIV/AIDS. More drugs are available to treat infections and reduce transmission. [3]

 **(c)** HIV is a virus. Viruses do not respond to antibiotics, so there is little point in trying to treat the infection with antibiotics. Secondary infections may be bacterial or fungal, which can be treated with antibiotics. [4]

**3 (a)** An antigen is a molecule on the surface of a cell. It can be used to recognise foreign cells. Antigens are usually proteins or glycoproteins. Antibodies are proteins made by the immune system. They are made by plasma cells and are used to bind to antigens and stop the activity of the foreign cell. [3]

 **(b)** Antibodies are proteins. They have a quaternary structure — usually four polypeptides bound together by disulphide bridges. The variable region has a specific shape — it is complementary to the shape of the antigen. The constant region may help to bind to phagocytes. There are hinge regions that allow flexibility so that it can bind to more than antigen. [4]

 **(c)** Poor diet lacking in protein; insufficient amino acids in diet; not all essential amino acids are included; the full range of 20 amino acids is needed to make antibodies. [4]