

Question Number	Answer	Mark																
1(a)	<table border="1"> <thead> <tr> <th>Feature</th> <th>Bacteria only</th> <th>Viruses only</th> <th>Both bacteria and viruses</th> </tr> </thead> <tbody> <tr> <td>Glycogen granules</td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Nucleic acids</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>Protein coat (capsid)</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>	Feature	Bacteria only	Viruses only	Both bacteria and viruses	Glycogen granules	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Nucleic acids	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Protein coat (capsid)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	(3)
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Question Number	Answer	Mark
1(b)(i)	<ol style="list-style-type: none"> <li>1. viruses (and bacteria) involved ;</li> <li>2. (usually) antibiotics {are only effective against bacteria / do not affect viruses / eq} ;</li> <li>3. {other medication / eq} needed to deal with viruses / eq ;</li> </ol>	max (2)

Question Number	Answer	Mark
1(b)(ii)	<ol style="list-style-type: none"> <li>1. both enrofloxacin and florfenicol named ;</li> <li>2. idea of {(high) effectiveness / eq} against all three bacteria / eq ;</li> <li>3. above {80% / 83%} / eq / average above 90% / eq ;</li> </ol>	(3)

Question Number	Answer	Mark
1(b)(iii)	<ol style="list-style-type: none"><li>1. idea that antibiotic used is {most effective / eq} (against the known bacterium) ;</li><li>2. idea that none of the antibiotics is 100% effective / some bacteria {survive / eq} ;</li><li>3. some bacteria {are resistant / eq} ;</li><li>4. idea of resistant strain {develops / prevented} ;</li></ol>	max (3)

Question Number	Answer	Mark
2(a)	<ol style="list-style-type: none"> <li>1. RNA in HIV and DNA in {bacterium / eq} ;</li> <li>2. comparative description of nucleic acid e.g. circular in bacterium and linear in HIV / eq ;</li> <li>3. plasmids in {bacterium / eq} and no plasmids in HIV ;</li> </ol>	maximum (2)

Question Number	Answer	Mark
2(b)	<ol style="list-style-type: none"> <li>1. {keratin / protein} in skin {surface / epidermis} ;</li> <li>2. idea of forms a {hard / impenetrable / physical / eq} barrier ;</li> </ol>	(2)

Question Number	Answer	Mark
2(c)(i)	<ol style="list-style-type: none"> <li>1. numbers decrease / eq ;</li> <li>2. small decrease in {first week / between weeks {4 / 5} and 6} / eq ;</li> <li>3. large decrease between weeks {1 / 2} to 3 / eq ;</li> <li>4. credit use of manipulated figures ;</li> </ol>	maximum (2)

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2* (c)(ii) QWC	<p>(QWC - Spelling of technical terms (<i>shown in italics</i>) must be correct and the answer must be organised in a logical sequence)</p> <ol style="list-style-type: none"> <li>1. {<i>glycoprotein</i> / gp120} on virus / eq ;</li> <li>2. binds with {receptors / CD4} / eq ;</li> <li>3. on (surface) membrane of <i>lymphocytes</i> / eq ;</li> <li>4. viral RNA enters the <i>lymphocyte</i> / eq ;</li> <li>5. viral RNA used to produce viral DNA (in <i>lymphocyte</i>) / eq ;</li> <li>6. by action of <i>reverse transcriptase</i> ;</li> <li>7. ref to formation of new viruses ;</li> <li>8. <i>lymphocyte</i> destroyed when new viruses {bud out of / leave} the cell / eq ;</li> <li>9. T killer {cells / <i>lymphocytes</i>} destroy T helper {cells / <i>lymphocytes</i>} / eq ;</li> </ol>	maximum (5)

Question Number	Answer	Mark
2(c)(iii)	B {cells / lymphocytes} { not activated / not stimulated / are inhibited / eq} / fewer antibodies / T killer cells {increase / multiply / eq} ;	(1)

Question Number	Answer	Additional Guidance	Mark
3(a)	<ol style="list-style-type: none"> <li>1. proteins consist of amino acids joined together by peptide bonds;</li> <li>2. credit reference to named bonds (between R groups) involved in holding {3D structure / eq} ;</li> <li>3. carbohydrates consist of {monsaccharides / glucoses / eq} ;</li> <li>4. reference to glycosidic {bonds / eq} between (adjacent) {glucose / eq} molecules ;</li> </ol>		(3) XP

Question Number	Answer	Additional Guidance	Mark
3(b)	<ol style="list-style-type: none"> <li>1. idea that the drugs could {bind to / alter shape of} {glycoproteins / gp120} ;</li> <li>2. idea that drugs bind to {receptors / antigens} on membrane / eq ;</li> <li>3. called CD4 (antigen / molecules) ;</li> <li>4. preventing virus attaching to T (helper / CD4<sup>+</sup>) cells / eq ;</li> </ol>		(3) XP

Question Number	Answer	Additional Guidance	Mark
*3(c)	<ol style="list-style-type: none"> <li>1. reference to reverse transcriptase ;</li> <li>2. idea of formation of (viral) DNA ;</li> <li>3. from (viral) RNA ;</li> <li>4. reference to integrase ;</li> <li>5. idea of integration of (viral) DNA into (host) DNA ;</li> <li>6. idea that {T helper cells / eq} would be {destroyed / killed / burst / eq} (by virus particles leaving cell) ;</li> <li>7. idea that more T (helper) cells would become infected ;</li> </ol>	<p><b>QWC focussing on clarity of expression</b></p> <p>2. reject idea that RNA is {turned into / converted into} DNA</p> <p>5. ACCEPT idea of {latency / formation of provirus / eq}</p>	(5) XP

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4(b)(i)	<ol style="list-style-type: none"> <li>idea of (SCAG is) caused by {a bacterium / bacteria} ;</li> <li>antibiotics {kill / stop reproduction / eq} of bacteria / are {bactericidal / bacteriostatic} ;</li> </ol>	(2)

Question Number	Answer	Mark
*4(b)(ii) QWC	<p>Spelling of technical terms must be correct and the answer must be organised in a logical sequence</p> <ol style="list-style-type: none"> <li>1. as age increases, acid secretion decreases / eq ;</li> <li>2. as age increases (above 30) , stomach cancer increase / eq ;</li> <li>3. as acid secretion decreases (below 120), stomach cancers increases / eq ;</li> <li>4. idea that the {higher age groups (51+) have low acid and high cancer / lower age groups (up to 30) have high acid and low cancer} ;</li> <li>5. Idea of {acid / low pH} (in stomach) kills {bacteria / <i>Helicobacter</i>} ;</li> <li>6. reference to development of SCAG {inhibited / prevented / eq} (by low pH / more stomach acid) ;</li> <li>7. idea of age affects the immune system ;</li> <li>8. idea that the older you are acid-producing cells are less effective e.g. fewer acid-producing cells / cancer cells replace the acid-producing cells ;</li> <li>9. idea that {acid / low pH} destroys cancer cells ;</li> <li>10. idea that mutations (leading to cancer) more likely to occur with age ;</li> </ol>	(5)