Question Number	Answer	Mark
2(a)	<table><tr><th>Description</th><th>True</th><th>False</th></tr><tr><td>B and T cells are formed in the bone marrow</td><td>✓</td><td></td></tr><tr><td>B cells stimulate T cells to produce clones of memory cells</td><td></td><td>✓</td></tr><tr><td>T helper cells produce chemicals that destroy pathogens</td><td></td><td>✓</td></tr><tr><td>B and T cells are able to form clones by mitosis</td><td>✓</td><td></td></tr></table> 1 mark each correct row ;;;;	**(4)**

Question Number	Answer	Mark
2(b)	1. (bacteria are) too small / reference to limitation of {magnification / resolution} ; 2. (bacteria) not stained ; 3. idea of bacteria already {removed / destroyed} e.g. phagocytosis ; 4. idea that bacteria are not present in the blood e.g. only a small {region / sample} shown, reference to local infection ;	**(2)**

Question Number	Answer	Mark
2(c)(i)	Either: 1. idea of fewer {lymphocytes / eq} ; 2. reference to {lymphocytes / eq} no longer needed / eq ; 3. (as) {antibiotics / drugs} {kill / destroy / eq} bacteria ; Or: 4. more {lymphocytes / eq} ; 5. idea of clonal expansion (of lymphocytes) / eq ; 6. idea that the antibiotics have not killed all the bacteria yet ;	**(2)**

Question Number	Answer	Mark
2(c)(ii)	1. idea that a placebo has no effect ; 2. (therefore there will be) more bacteria / eq ; 3. (therefore there will be) more {lymphocytes / eq} ; 4. (more lymphocytes due to) clonal expansion / eq ;	**(2)**

Question Number	Answer	Mark
3(a)(i)	1. {competition / eq} for nutrients ; 2. {competition / eq} for space ; 3. {secretion / eq} {chemicals / substances / lysozyme / eq} OR affects {pH / eq} ; 4. {stimulation / eq} of (skin) immune system / eq ;	**(2)**

Question Number	Answer	Mark
3(a)(ii)	A ;	**(1)**

Question Number	Answer	Mark
3(b)	1. idea that influenza may allow development of other diseases e.g. opportunistic infections ; 2. antibiotics will {kill / inhibit growth of / eq} bacteria ;	**(2)**

Question Number	Answer	Mark
3(c)(i)	correct answer 37.2 / 37.17 / 37 (%) gains 2 marks 1. (226 – 142) / 84 ; 2. ÷ 226 to give 37.2 / 37.17 / 37 (%) ;	**(2)**

Question Number	Answer	Mark
3(c)(ii)	1. yes ; 2. idea that if current rate continues / eq ; 3. idea of achieving lower than the target / eq; 4. credit use of supporting figures ;	**(3)**

Question Number	Answer	Mark
3(c)(iii)	1. reference to some bacteria {can resist / are resistant to} antibiotics ; 2. idea of {resistance being genetic / can be passed on} ; 3. reference to MRSA / other named example ;	**(2)**

<table>
<tr><th>Question Number</th><th>Answer</th><th>Mark</th></tr>
<tr><td>4(a)</td><td>
<table>
<tr><th>Description</th><th>Name of structure</th><th>P, E or B</th></tr>
<tr><td>Enclosed by outer smooth membrane
inner membrane folded forming cristae</td><td>Mitochondrion / mitochondria</td><td>E / eukaryotic</td></tr>
<tr><td>Long strand-like structure extending out from the cell
Used for locomotion</td><td>Flagellum / flagella</td><td>B / both</td></tr>
<tr><td>Small, circular loop of double-stranded DNA</td><td>plasmid</td><td>P / prokaryotic</td></tr>
</table>
1 mark for any two correct cells ;;;
</td><td>(3)</td></tr>
</table>

Question Number	Answer	Mark
4(b)(i)	bactericidal ;	**(1)**

Question Number	Answer	Mark
4(b)(ii)	1. cell wall {weaker /cannot form properly / eq} ; 2. {cell / cell wall} bursts (easily) / eq ; 3. during division /eq ;	**max (2)**

Question Number	Answer	Mark
4(b)(iii)	1. reference to antibiotic acting as selective pressure ; 2. reference to some bacteria resistant (to antibiotic) ; 3. idea that resistant bacteria survive and {reproduce / pass on resistance / pass on gene / eq}; 4. idea that antibiotic no longer effective ; 5. reference to some infections cannot be treated with antibiotics ;	**max (2)**

Question Number	Answer	Mark
4(c)	1. idea of bacteria distributed evenly / description of technique e.g. lawn spreading ; 2. description of method used to apply different antibiotics at known positions e.g. multidisks, wells in agar ; 3. reference to control of antibiotic concentration ; 4. reference to {sterile / aseptic} technique ; 5. reference to incubation at a suitable temperature ; 6. description of how effect is assessed e.g. measure {clear area / inhibition zone / eq} ; 7. reference to replication (with same bacterium) ; 8. reference to repetition with different bacteria ;	**max (4)**