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

Question Number	Answer	Mark
1(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
1(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
1(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
1(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)**

Question Number	Answer	Mark
2(a)	<table><tr><th>Statement</th><th>True</th><th>Fa</th></tr><tr><td>HIV infects b-lymphocytes in the human immune system</td><td></td><td>✓</td></tr><tr><td>The genetic material in HIV is a form of RNA</td><td>✓</td><td></td></tr><tr><td>The enzyme, reverse transcriptase, is used by HIV</td><td>✓</td><td></td></tr></table> 1 mark each correct row ;;;	**(3)**

Question Number	Answer	Mark
2(b)(i)	1. change in the {nucleotides / bases} / eq ; 2. in {RNA / DNA} / eq ; 3. which leads to change in the {sequence / eq} of amino acids in (primary structure of) a {polypeptide / protein} / eq ;	**(2)**

Question Number	Answer	Mark
2(b)(ii)	1. idea that HIV has {many / variety of / new / eq} {strains / types /antigens / protein coats / eq} (in infected person) ; 2. some strains {are / become} resistant to {an individual / a specific / a particular / eq} drug / eq ; 3. these would survive if (only one drug used) / eq ; 4. {mixture of drugs / eq } has more chance of getting rid of {all / more} (strains / types / eq) / eq ; 5. reference to drugs used together because of mutation ; 6. reference to rapid rate of mutation ; 7. reference to rapid rate of {multiplication / eq} of virus ;	**(4)**

Question Number	Answer	Mark
3 (a) (i)	B ;	**(1)**

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

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

Question Number	Answer	Mark
3(b)	**Features** / **Totipot stem cell** / **Pluripotent stem cell** Can give rise to totipotent stem cells: ✓ / × Can give rise to differentiated cells: ✓ / ✓ Any two correct for 1 mark	**(2)**

Question Number	Answer	Mark
***3 (c) QWC**	QWC – Spelling of technical terms *(shown in italics)* must be correct and the answer must be organised in a logical sequence) 1. idea of correct stimulus e.g. chemical ; 2. (causes) {some genes active / some inactive} (in bone marrow stem cell) / eq ; 3. only the active genes are transcribed / eq ; 4. (because) mRNA made (only at active genes) / eq ; 5. protein made / eq ; 6. which (determine / eq) cell {structure / function} / permanently modifies cell / eq ;	**max (4)**

Question Number	Answer	Mark
4(a)	<table><tr><th>Source of antibodies</th><th>Form of immunity</th></tr><tr><td></td><td>D</td></tr><tr><td></td><td>B</td></tr><tr><td></td><td>C</td></tr><tr><td></td><td>A</td></tr></table> Note: [accept descriptions instead of letters] 4 correct = 2 marks 2 or 3 correct = 1 mark 0 or 1 correct = 0 marks ;;	**(2)**

Question Number	Answer	Mark
4(b)	1. (bacterium) is made of many different {polymers / chemicals / eq} / eq ; 2. which can act as antigens / eq ; 3. reference to B {lymphocytes / cells} ; 4. reference to (individual B-lymphocytes) recognise specific antigens / antibodies are specific / eq ; 5. reference to {activation/ eq} of B-lymphocytes by T {lymphocytes / cells} ; 6. reference to mitosis (in B-lymphocytes or cells) ; 7. to {form / eq} genetically identical plasma cells ;	**max (4)**

Question Number	Answer	Mark
4(c)	1. specific {antigen / virus / pathogen / bacterium / eq} can be {identified / eq} ; 2. idea of {specific / monoclonal} antibody binds to {specific / only one} antigen ; 3. specific treatment can be given / eq ; 4. avoids unnecessary use of {drugs / treatment} / eq ; 5. more likely to be effective / eq ;	**max (3)**