

Answers to examination-style questions

Answers	Marks	Examiner's tips
<p>1 (a) memory B/T cells do not recognise new antigens; antibodies previously produced are not effective; shape not complementary to new antigen; takes time to produce effective antibodies;</p> <p>(b) mitochondria provide more ATP; more RER/ribosomes synthesise proteins; more Golgi body secretes/modifies or packages proteins/produces glycoproteins; (B lymphocytes) produce antibodies;</p>	<p>2 max</p> <p>4</p>	<p>The immune response is a specific defence mechanism, so different antigens stimulate different B and T cells.</p> <p>Stimulated B cells (lymphocytes) are known as plasma cells and have undergone cellular changes associated with the production of antibodies (proteins).</p>
<p>2 (a) formation of vesicle/phagocytosis; derived from plasma membrane;</p> <p>(b) (i) lysosome;</p> <p>(ii) contain hydrolytic enzymes; to break down/digest bacterium;</p>	<p>2</p> <p>1</p> <p>2</p>	<p>'Engulfment' is not sufficient for a mark.</p> <p>Lysosomes have a number of different roles in cells – this is just one of them.</p>
<p>3 (a) injection of antigens; stimulates the formation of memory cells; (antigen from) attenuated microorganism/ non-virulent microorganisms/dead microorganisms/isolated from microorganism;</p> <p>(b) (i) antibodies are specific to mumps antigen; secondary antibodies specific to mumps antibody;</p> <p>(ii) removes unbound secondary antibodies; otherwise enzyme may be present/may get colour change anyway/false positive;</p> <p>(iii) no antibodies to bind (to antigen); therefore secondary antibody (with the enzyme) will not bind; no enzyme/enzyme-carrying antibody present (after washing in step 4);</p>	<p>2 max</p> <p>1 max</p> <p>2</p> <p>2 max</p>	<p>The first two mark points are sufficient. You do not need to know the different types of vaccines described.</p> <p>The important idea is the specificity of the antibody to the antigen.</p> <p>Ensure you are very precise in your answer, particularly when referring to antibody and secondary antibody.</p>
<p>4 (a) stimulates memory cells; antibodies produced quicker;</p>	<p>2 max</p>	<p>This is the secondary response, resulting in a greater amount of antibody being produced.</p>

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(b) passive immunity; no memory cells produced; antivenom is broken down/destroyed;	2 max	The antivenom acts as an antigen and antibodies break it down.
(c) could transfer disease/allergy/immune response to antibodies from animal;	1	
5 (a) any 1 from – publicity about vaccination/ better health education/risks of ‘flu epidemics’/ better awareness of risk/more commonly available/free on NHS;	1	
(b) (i) 3.07 million; 1990/91 – 26% of 7.4 million = 1.92 million and 2000/01 – 64% of 7.8 million = 4.99 million;	2	Correct answer = 2 marks. The following will gain 1 mark: <ul style="list-style-type: none"> • the correct answer but no ‘millions’ • the correct reading of all 4 figures from the graph • the correct method using figures read wrongly from the graph.
(ii) over 50% of population being vaccinated; but only from 2000 onwards;	2	Giving the principle of more people being vaccinated each year = 1 mark.
(iii) different strain/type of virus each year/ virus mutates; with different antigens; influenza antibodies/memory cells destroyed;	2 max	Antigenic variation is a major problem and explains why vaccination is only partly successful in controlling the spread of influenza.
(c) (protein coat) carries antigens; stimulates B cells/production of antibodies; production of memory cells;	2 max	Proteins or glycoproteins on the surface of pathogens are the commonest form of antigens.