

## Answers to examination-style questions

Answers	Marks	Examiner's tips
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;	<b>2 max</b>	The immune response is a specific defence mechanism, so different antigens stimulate different B and T cells.
(b) mitochondria provide more ATP; more RER/ribosomes synthesise proteins; more Golgi body secretes/modifies or packages proteins/produces glycoproteins; (B lymphocytes) produce antibodies;	<b>4</b>	Stimulated B cells (lymphocytes) are known as plasma cells and have undergone cellular changes associated with the production of antibodies (proteins).
2 (a) formation of vesicle/phagocytosis; derived from plasma membrane;	<b>2</b>	'Engulfment' is not sufficient for a mark.
(b) (i) lysosome;	<b>1</b>	
(ii) contain hydrolytic enzymes; to break down/digest bacterium;	<b>2</b>	Lysosomes have a number of different roles in cells – this is just one of them.
3 (a) injection of antigens; stimulates the formation of memory cells; (antigen from) attenuated microorganism/ non-virulent microorganisms/dead microorganisms/isolated from microorganism;	<b>2 max</b>	The first two mark points are sufficient. You do not need to know the different types of vaccines described.
(b) (i) antibodies are specific to mumps antigen; secondary antibodies specific to mumps antibody;	<b>1 max</b>	The important idea is the <b>specificity</b> of the antibody to the antigen.
(ii) removes unbound secondary antibodies; otherwise enzyme may be present/may get colour change anyway/false positive;	<b>2</b>	
(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);	<b>2 max</b>	Ensure you are very precise in your answer, particularly when referring to antibody and secondary antibody.
4 (a) stimulates memory cells; antibodies produced quicker;	<b>2 max</b>	This is the secondary response, resulting in a greater amount of antibody being produced.

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(b) passive immunity; no memory cells produced; antivenom is broken down/destroyed;	<b>2 max</b>	The antivenom acts as an antigen and antibodies break it down.
(c) could transfer disease/allergy/immune response to antibodies from animal;	<b>1</b>	
<b>5 (a)</b> any 1 from – publicity about vaccination/ better health education/risks of ‘flu epidemics’/ better awareness of risk/more commonly available/free on NHS;	<b>1</b>	
(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;	<b>2</b>	Correct answer = 2 marks. The following will gain 1 mark: <ul style="list-style-type: none"> <li>• the correct answer but no ‘millions’</li> <li>• the correct reading of all 4 figures from the graph</li> <li>• the correct method using figures read wrongly from the graph.</li> </ul>
(ii) over 50% of population being vaccinated; but only from 2000 onwards;	<b>2</b>	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;	<b>2 max</b>	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;	<b>2 max</b>	Proteins or glycoproteins on the surface of pathogens are the commonest form of antigens.