Communicable diseases,disease prevention & the immune system Multiple Choice

Model Answers 1

Level	A Level
Subject	Biology
Exam Board	OCR
Module	Biodiversity, evolution and disease
Topic	Commmunicable diseases,disease prevention & the immune system
Booklet	Model Answers 1

Time allowed: **26 minutes**

Score: **/19**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E
>69%	56%	50%	42%	34%	26%

Question 1

Autoimmune diseases are often treated with a course of antibody injections.

Which of the following statements, **A** to **D**, describes the immunity arising from this treatment?

A active natural immunity

B active artificial immunity

C passive natural immunity

D passive artificial immunity **[1]**

To gain active immunity your body must be given the antigens. Passive immunity is gained when it receives the antibodies

Question 2

Which of the following types of cells is **not** involved in a primary immune response?

A T-memory cells

B T-helper cells

C T-killer cells

D plasma cells **[1]**

T memory cells are created after the primary response which makes the secondary response faster

Question 3

Which of the following antibodies increase(s) the phagocytosis of pathogens?

1 opsonins

2 agglutinins

3 anti-toxins

A. 1, 2 and 3

B. Only 1 and 2

C. Only 2 and 3

D Only 1 **[1]**

Opsonins bind to antigens on the pathogen with the constant region of the antibody projecting outwards. These attach to receptors on the cell surface membrane of the phagocyte enabling it to engulf it. Agglutinins make pathogens clump together so more can be engulfed at one time

Question 4

Which of the following describes an autoimmune disease?

A. a disease in which an individual's own body cells are antigenic

B. a disease in which a pathogen attacks cells of the immune system

C. a disease that prevents production of antibodies

D. a disease to which an individual has developed immunity **[1]**

The body's own cells are usually regarded as 'self' and do not trigger an immune response. Autoimmune diseases such as diabetes take place when they are regarded as 'non self' and stimulate an immune response.

Question 5

Lupus is an autoimmune disease. One symptom is a facial rash, typically in a butterfly shape across the cheeks.

Following a blood test, which of the following would indicate the patient has Lupus?

A. the presence of antibodies for the cell surface antigens of connective tissue

B. the presence of herpes antibodies

C. the presence of high levels of antihistamines

D. the absence of B lymphocytes **[1]**

Lupus is an auto immune condition where the body's own immune system recognises the 'self' antigens on the surface of cells as 'non self' and produces antibodies against them.

Question 6

An individual bitten by a rabid dog can be treated by an injection of human rabies antibodies.

Which option, **A** to **D**, describes the type of immunity provided by this treatment?

A. natural passive

B. natural active

C. artificial passive

D. artificial active **[1]**

To become actively immune, your body requires the presence of the antigen. If you catch a disease then it's natural active whereas an injection of harmless antigens is artificial.

Passive immunity is gained when you receive the antibody. It's in the form of an injection (artificial) or across the placenta or breast milk (natural)

Passive immunity is short term but the protection is immediate.

Question 7

Which of the options, **A** to **D**, is a primary defence against pathogens?

A. antibody production

B. inflammation

C phagocytosis

D T-killer cells

[1]

C was also allowed in this question as it's a non specific response.

Primary defence is there to prevent the entry of pathogens. Secondary responses such as immunity react to the entry of pathogens ie antibody production, phagocytosis, killer T cells

Question 8

Three methods of pathogen transmission between animals or plants are listed below.

1 direct contact
2 vectors
3 droplets

Which of the methods of pathogen transmission **do** apply to plants?

A. 1, 2 and 3

B. Only 1 and 2

C. Only 2 and 3

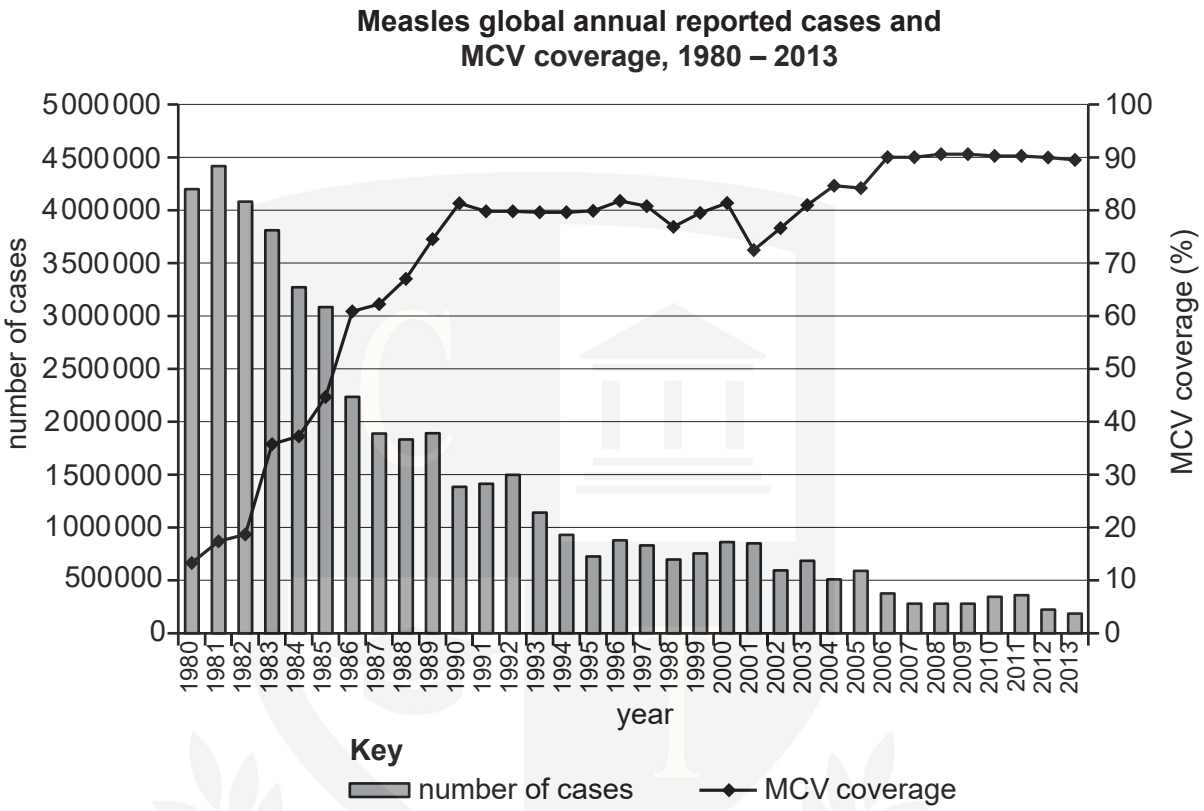
D. Only 1

[1]

Droplet transmission only takes place in animals, for example TB is spread when people cough

Question 9

Measles is a serious disease that can be prevented by vaccination. The chart below shows the Measles-containing Vaccine (MCV) coverage and annual reported cases of measles between 1980 and 2013.



Which of the following statements, **A** to **D**, is a correct interpretation of the chart?

A. An increase in herd immunity resulted in fewer deaths from measles.

B. The highest number of measles cases occurred when MCV coverage was at its lowest.

C. A 90% MCV coverage resulted in fewer than half a million cases of measles each year.

D. There is a positive correlation between the number of measles cases and the MCV coverage.

[1]

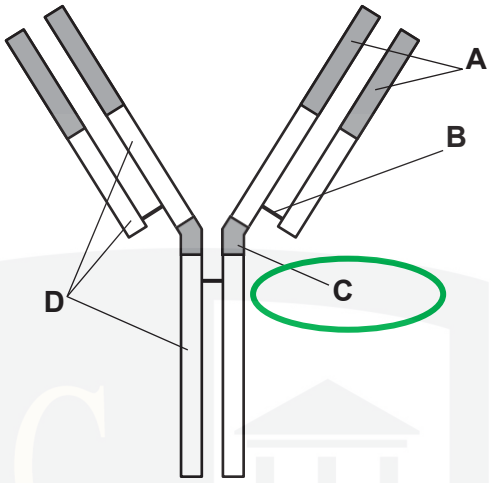
A The data does not show deaths, it shows cases of measles

B In 1980 the MCV coverage was lowest but the number of cases was higher in 1981

D There is a negative correlation

Question 10

The diagram below shows the simplified structure of an antibody.

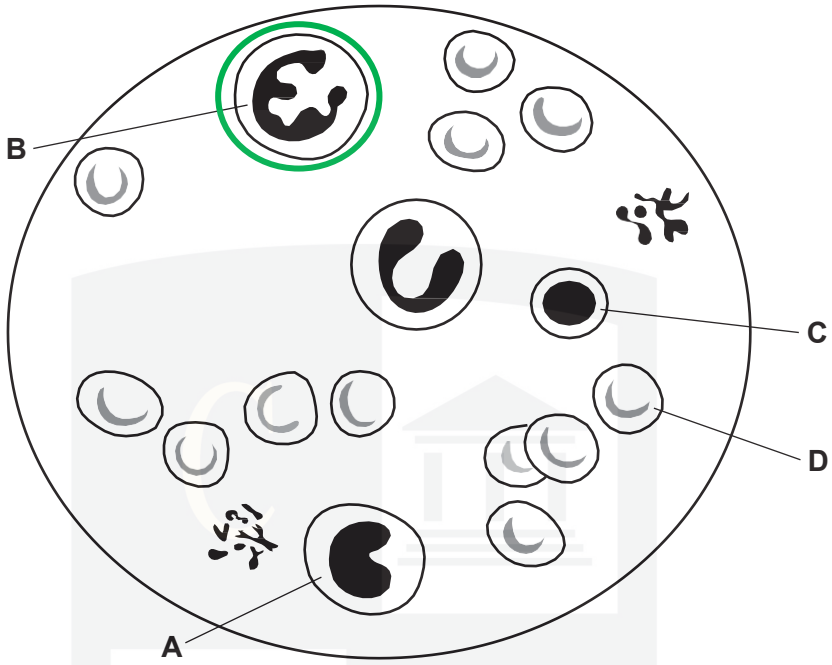


Which of the letters, **A** to **D** identifies the region of the antibody that allows the distance between the antibody binding sites to vary. **[1]**

C is pointing to the hinge region which allows the two antibody binding sites to change the distance between them

Question 11

A diagram of a stained blood smear observed under a light microscope is shown below.



Which of the structures labelled **A** to **D** in the diagram is a neutrophil? **[1]**

Neutrophils have a lobed nucleus which is B

Question 12

Which of the following options, **A** to **D**, is a primary defence mechanism against pathogens?

A neutralisation

B agglutination

C phagocytosis

D blood clotting **[1]**

Blood clotting helps to prevent the entry of pathogens as well as reducing blood loss

Question 13

Pathogens cause disease and are transmitted from individual to individual in a variety of ways.

Which of the rows, **A** to **D**, in the table below is correct?

	Disease	Type of pathogen	Means of transmission
A	Athlete's foot	Fungus	Direct and indirect contact
B	HIV/AIDs	Virus	Indirect contact
C	Malaria	Bacterium	Vector
D	Tuberculosis	Protoctist	Direct contact

[1]

HIV is transmitted by direct contact

Malaria is caused by a protoctist

TB is caused by a bacterium

Question 14

Young mammals receive antibodies in their mother's milk. This is an example of which type of immunity?

A artificial active immunity

B artificial passive immunity

C natural active immunity

D natural passive immunity

[1]

Passive immunity is when your body acquires the antibodies, natural immunity is when you acquire the antigens

Question 15

Which of the following descriptions is correct?

A Vaccination gives long-term protection, immunisation gives short-term protection.

B Vaccination involves injection of antigenic material and immunisation is the process of developing immunity.

C Vaccination involves injection of antigenic material, immunisation is injection of antibodies.

D Vaccination and immunisation have the same meaning. **[1]**

Remember vaccination does NOT involve the injection of SMALL AMOUNT of antigenic material

Question 16

If a person is bitten by a venomous snake, the immediate treatment is normally to inject the person with the appropriate antibodies.

This is an example of which type of immunity?

A artificial active immunity

B artificial passive immunity

C natural active immunity

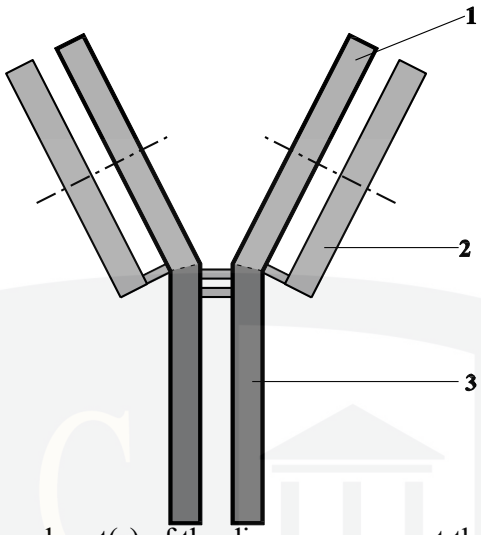
D natural passive immunity

[1]

Passive immunity is when your body acquires the antibodies, active immunity is when you acquire the antigens

Question 17

The diagram represents the general structure of an antibody.



Which of the following numbered part(s) of the diagram represent the part of the antibody that has the same sequence of amino acids in all antibodies?

A. 1, 2 and 3

B. Only 1 and 2

C. Only 2 and 3

D. Only 1 **[1]**

2 and 3 are part of the constant region, which is the same in all antibodies. It's the part that binds with receptors on the surface of phagocytes

Question 18

Plants such as the soybean have a number of defence strategies to prevent infection by pathogens.

Which of the following strategies is a chemical defence against pathogen infection?

A callose deposits at sieve tube ends that prevent pathogen movement in phloem

B hydrolytic enzymes such as chitinase found between cells

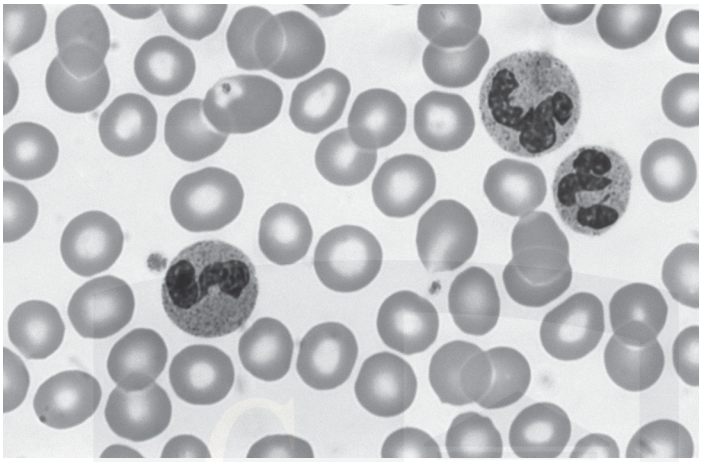
C stomata can be closed by guard cells if pathogens are detected

D cell walls can be thickened by lignin, making cell entry very difficult for pathogens **[1]**

Fungi heave walls made of chitin so chitinase enzymes will digest the fungal cell wall

Question 19

The photograph below shows a blood smear.



Which row correctly lists the cells that are visible in the smear?

	erythrocytes	lymphocytes	monocytes	neutrophils
A	✓	×	✓	✓
B	✓	×	×	✓
C	✓	✓	✓	×
D	×	✓	✓	✓

[1]

Erythrocytes are the biconcave discs and neutrophils are stained with a lobed nucleus