

Communicable diseases, disease prevention and the immune system – 2021/20 GCE Biology A Component 02**1. Nov/2021/Paper_H420/02/No.5**

Antibodies form part of the immune response.

Which of the following types of antibody bind to antigens on the surface 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

Your answer ☐

[1]

2. Nov/2021/Paper_H420/02/No.6

The primary immune response involves differentiation and clonal expansion of certain white blood cells.

Which of the following cells result from clonal expansion during the primary immune response?

- 1 plasma cells
- 2 B-memory cells
- 3 T-memory cells

- A** 1, 2 and 3
- B** only 1 and 2
- C** only 2 and 3
- D** only 1

Your answer ☐

[1]

3. Nov/2021/Paper_H420/02/No.7

Lupus is an autoimmune disease that affects the skin, joints and internal organs.

Which of the following is likely to be an effective treatment for lupus?

- A** immunosuppressant drugs
- B** injection of antibodies from someone who does not suffer from lupus
- C** somatic gene therapy
- D** vaccination

4. Nov/2021/Paper_H420/02/No.8

Lupus is a rare condition affecting approximately 0.025% of the population. However, 9 out of 10 sufferers are women.

The population of England and Wales in 2019 was approximately 64 million.

Which of the following estimates shows the number of men in England and Wales suffering from lupus?

- A** 160
- B** 1600
- C** 16 000
- D** 160 000

Your answer

[1]

5. Nov/2020/Paper_H420/02/No.1

Which of the following human diseases, **A** to **D**, is caused by a fungus?

- A** athlete's foot
- B** influenza
- C** malaria
- D** tuberculosis

Your answer

[1]

6. Nov/2020/Paper_H420/02/No.2

Which of the following plant diseases, **A** to **D**, is caused by a pathogen from the kingdom Protocista?

- A** black sigatoka in bananas
- B** ring rot in tomatoes
- C** tobacco mosaic disease
- D** tomato late blight

Your answer

[1]

7. Nov/2020/Paper_H420/02/No.22

The human body is able to protect itself from disease in a variety of ways.

(a) The table shows a list of cells and structures.

Letter	Cell or structure
A	antigen-presenting cells
B	erythrocytes
C	goblet cells
D	lymphocytes
E	lysosomes
F	mucous membranes
G	neutrophils
H	phagosomes
I	platelets
J	skin

(i) Which letter or letters indicate cells or structures involved in preventing the entry of pathogens into the body?

..... [1]

(ii) Which letter or letters indicate cells or structures that act as a **physical barrier** to the entry of pathogens?

..... [1]

(iii) Which letter or letters indicate cells or structures that are involved in phagocytosis?

..... [1]

(iv) Which letter or letters indicate a tissue?

Explain your answer.

.....

 [2]

- (b) Phagocytosis involves cytokines and opsonins.

State the role of cytokines and opsonins in phagocytosis.

cytokines

.....

opsonins

.....

[2]

- (c) Chickenpox is a common disease.

People who have recently recovered from chickenpox can donate plasma so that their antibodies can be given to leukaemia patients with weakened immune systems.

- (i) Use a tick (✓) to indicate in the table below which type of immunity is functioning in a leukaemia patient when given chickenpox antibodies.

Type of immunity	
natural and active	
natural and passive	
artificial and active	
artificial and passive	

[1]

- (ii) Explain your answer to part (i).

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..... [2]

8. Nov/2020/Paper_H420/03/No.4(b)

- (b) Vancomycin is an antibiotic that has been used to treat bacterial infections for many decades. Several strains of bacteria have evolved resistance to vancomycin.

Oritavancin is an antibiotic with a similar structure to vancomycin.

Table 4.2 shows data obtained from treatments with the two antibiotics.

		oritavancin	vancomycin
Years of use as an antibiotic		4	60
Percentage of patients developing side effects	nausea	9.9	10.5
	headache	7.1	6.7
	diarrhoea	3.7	3.2
	vomiting	4.6	4.7
	constipation	3.4	3.9
	dizziness	2.7	2.6
Percentage of bacterial infections cured	<i>Staphylococcus aureus</i>	82.5	83.5
	MRSA	81.4	80.6
	<i>Streptococcus sp.</i>	77.2	85.3

Table 4.2

Use the data in Table 4.2 to evaluate the advantages **and** disadvantages of using oritavancin rather than vancomycin as an antibiotic.

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..... [2]