

11.2 Antibodies & Vaccination

Question Paper

Course	CIEA Level Biology
Section	11. Immunity
Topic	11.2 Antibodies & Vaccination
Difficulty	Hard

Time allowed: 20
Score: /10
Percentage: /100

Question 1

A worldwide vaccination programme in the 1970s successfully eradicated smallpox.

Which row in the table correctly identifies the problems of eradicating other diseases through global vaccination?

	TB	malaria	sickle cell anaemia	cholera
A	genetically inherited recessive condition	different vaccines needed for active and dormant to active forms	invade gut cells where immune system less effective	different stages with different antigens; invades body cells
B	different vaccines needed for active and dormant to active forms	different stages with different antigens; invades body cells	genetically inherited recessive condition	invade gut cells where immune system less effective
C	different stages with different antigens; invades body cells	poor response with malnourished children; boosters then needed	genetically inherited recessive condition	different vaccines needed for active and dormant to active forms
D	invade gut cells where immune system less effective	genetically inherited recessive condition	invade gut cells where immune system less effective	poor response with malnourished children; boosters then needed

[1 mark]

Question 2

Read the following statements:

- 1 There are no B-lymphocytes and T-lymphocytes in the stomach.
- 2 Macrophages present antigens in vaccines to stimulate an immune response.
- 3 The TB antigens necessary to produce an immune response are proteins which would be digested in the stomach and small intestine.

Which statement(s) explains why the TB vaccination must be given via injection rather than by mouth?

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

[1 mark]

Question 3

Monoclonal antibodies can be used to treat diseases.

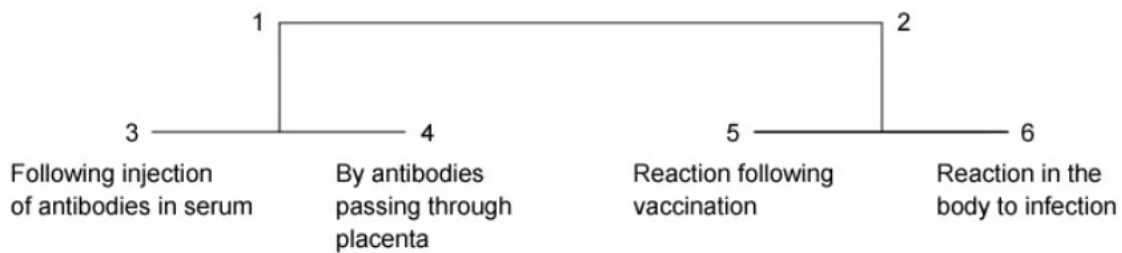
Which of the following statements describe a current clinical use for monoclonal antibodies?

- A. They can protect against a wide variety of viruses and bacteria.
- B. They are derived from the plasma of individuals already immune to infectious pathogens.
- C. They each have broad specificity for many antigenic determinants.
- D. They can reduce inflammation associated with rheumatoid arthritis.

[1 mark]

Question 4

The diagram below shows different types of immunity. Each number refers to one type.



Which of the rows in the table would be correct?

	1	2	3	4	5	6
A	active	passive	natural	artificial	natural	artificial
B	passive	active	artificial	natural	artificial	natural
C	passive	active	natural	artificial	artificial	natural
D	active	passive	artificial	natural	artificial	natural

[1 mark]

Question 5

The table below shows some cells involved in the production of monoclonal antibodies.

Which row shows the cells that can divide continuously?

	cancer cells	mouse B-lymphocyte plasma cells	hybridoma cells
A	✓	X	✓
B	✓	✓	✓
C	✓	✓	X
D	X	✓	✓

[1 mark]

Question 6

The World Health Organisation (WHO) aimed for polio to be eradicated by vaccination by the year 2000. However, there are still reports of cases of polio twenty years later.

Which of the following statements explains the new cases of polio?

- 1 Records of vaccinated and unvaccinated people are incomplete.
- 2 There is not enough research to develop more effective vaccines.
- 3 Some parts of countries are difficult to reach because of poor transport or as a result of civil war.

A. 1 and 2

B. 1 and 3

C. 3 only

D. 1 only

[1 mark]

Question 7

Which of the following is not a use for monoclonal antibodies?

- A. the identification of chromosome abnormality
- B. blood and tissue typing
- C. pregnancy test
- D. used to prevent organ rejection

[1 mark]

Question 8

The statements below refer to the functions of antibodies.

Which of these statements are not correct?

- 1 Antibodies can combine with viruses inside cells to prevent them from damaging cells.
- 2 Antibodies can attach to flagella to make the bacteria less mobile.
- 3 Antibodies with single binding sites can cause agglutination of bacteria.
- 4 Antibodies can, with other molecules, make holes in the cell walls of bacteria.
- 5 Antibodies can coat bacteria to mark them for phagocytosis.
- 6 Antibodies can neutralise toxins.

A. 1, 2 and 6

B. 1 and 6

C. 2, 3 and 5

D. 1 and 3

[1 mark]

Question 9

The statements below refer to steps in the production of monoclonal antibodies.

- 1 hybridoma cells cultured
- 2 mouse plasma cells fused with cancer cells
- 3 mouse B-lymphocytes that recognise the antigen become plasma cells
- 4 mouse injected with antigen
- 5 hybridoma cells making appropriate antibody cloned

What would be the correct order for these statements?

	first	→	→	→	last
A	4	3	5	2	1
B	4	3	2	1	5
C	3	4	2	5	1
D	3	4	2	1	5

A.

[1 mark]

Question 10

The statements below describe different types of vaccines

- 1 contains part of a pathogen that induces an immune response
- 2 contains antibodies for the pathogen
- 3 contains a pathogen has been treated with heat or chemicals
- 4 contains a weakened strain of the pathogen

Which row of the table describes these types of vaccine?

	live attenuated vaccine	inactive vaccine	subunit vaccine
A	1	3	2
B	1	4	2
C	4	3	1
D	4	2	1

[1 mark]