

11.1 Antibody Production & Vaccination

Question Paper

Course	DP IB Biology
Section	11. Animal Physiology (HL Only)
Topic	11.1 Antibody Production & Vaccination
Difficulty	Hard

Time allowed: 10
Score: /5
Percentage: /100

Question 1

The statements below describe different types of vaccines

- I. Contains part of a pathogen that induces an immune response.
- II. Contains antibodies for the pathogen.
- III. Contains a pathogen that has been treated with heat or chemicals.
- IV. Contains a weakened strain of the pathogen.

Which row of the table below correctly describes these types of vaccines?

	Live attenuated vaccine	Inactive vaccine	Subunit vaccine
A	I	III	II
B	I	IV	II
C	IV	III	I
D	IV	II	I

[1 mark]

Question 2

The statements below refer to the functions of antibodies:

- I. Antibodies can combine with viruses inside cells to prevent them from damaging cells.
- II. Antibodies can attach to flagella to make the bacteria less mobile.
- III. Antibodies with single binding sites can cause agglutination of bacteria.
- IV. Antibodies can, with other molecules, make holes in the cell walls of bacteria.
- V. Antibodies can coat bacteria to mark them for phagocytosis.
- VI. Antibodies can neutralise toxins.

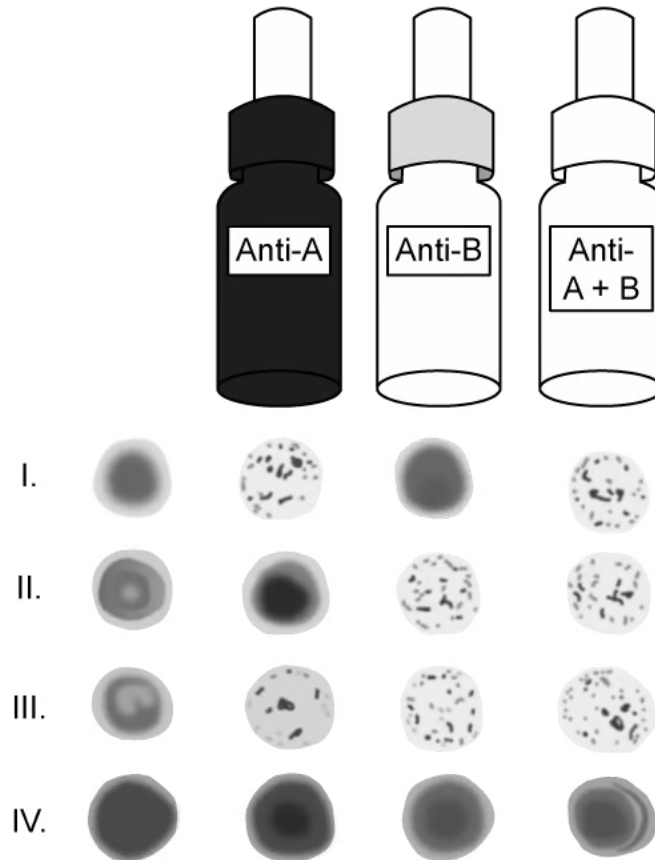
Which of these statements are **not** correct?

- A. I, II and VI
- B. I and VI
- C. II, III and V
- D. I and III

[1 mark]

Question 3

If a patient is given a transfusion of the wrong blood type, an immune response results. This response involves agglutination followed by haemolysis, where red blood cells are destroyed and blood may then coagulate. Blood typing involves mixing blood samples with antibodies. The diagram below shows the results of a blood typing test, showing the reactions between blood types (rows) and antibody serums (columns). The first column shows the appearance of each blood sample before testing occurred.



Identify the row in the table below that correctly identifies the blood type of blood samples I - IV.

	I	II	III	IV
A	O	O	O	AB
B	A	B	AB	O
C	AB	AB	AB	O
D	B	A	AB	O

[1 mark]

Question 4

When a phagocyte responds to the presence of a pathogen, the following events happen:

- I. Enzymatic digestion
- II. Exocytosis
- III. Phagocytosis
- IV. Vacuole formation
- V. Endocytosis

Which of the following would be the correct order of events?

	Step 1	Step 2	Step 3	Step 4
A	V	I	IV	III
B	V	IV	I	II
C	III	II	V	I
D	III	V	I	IV

[1 mark]

Question 5

The text below describes the first zone (i.e. the result window) of a pregnancy testing stick.

The mobile monoclonal antibodies that have combined with I bind to a layer of fixed antibodies. This gives a coloured line in the first window indicating that the hormone is II. This would be a III test result, indicating that the woman is IV.

Identify the row in the table below that correctly completes the text above.

	I	II	III	IV
A	hCG	present	positive	pregnant
B	antigens	hCG	positive	not pregnant
C	hCG	absent	negative	not pregnant
D	latex particles	present	negative	not pregnant

[1 mark]