
BIOLOGY VCE UNITS 3&4 DIAGNOSTIC TOPIC TESTS 2017

TEST 5: RESPONDING TO ANTIGENS

TOTAL 40 MARKS (45 MINUTES)

Student's Name: _____ Teacher's Name: _____

Directions to students

Write your name and your teacher's name in the spaces provided above.
Answer all questions in the spaces provided.

SECTION A – MULTIPLE-CHOICE QUESTIONS

Instructions for Section A

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1; an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

Unless otherwise indicated, the diagrams in this booklet are **not** drawn to scale.

Question 1

What part of the immune system distinguishes self from non-self?

- A. major histocompatibility markers (MHC)
- B. antigens
- C. leukocytes
- D. B cells only

Question 2

Why is a second injection of antigen given during a routine vaccination program?

- A. In case the first injection had attenuated antigens.
- B. In order to boost the immune response for long term protection.
- C. In order to produce helper T memory cells.
- D. The primary antibody response is greater than the secondary.

Question 3

Mast and basophil cells

- A. are involved in the allergic response to foreign particles.
- B. use immunoglobulin A (IgA) antibodies to bind to foreign particles.
- C. release chemicals that reduce inflammation.
- D. are responsible for the relaxation of smooth muscles.

Question 4

Complement proteins

- A. can coat and lyse bacteria ready for phagocyte ingestion.
- B. are secreted by some cells when they are infected by virus particles.
- C. are produced by none of the immune system cells.
- D. kill body cells that have been infected by virus particles.

Question 5

Which of the following is a reason for lymph nodes swelling?

- A. cancer cells
- B. when bacterial cells are ingested by macrophages
- C. when T and B memory cells in particular rapidly undergo mitosis in the presence of foreign antigens
- D. all of the above

Question 6

Which of the following outlines the function of dendritic cells?

- A. form an important role as an antigen presenting cell
- B. communicate with foreign particle's MHC
- C. communicate with accessory cells
- D. all of the above

Question 7

Humoral immunity

- A. is an immune response that does not involve antibodies.
- B. involves the activation of phagocytes and antigen-specific cytotoxic T lymphocytes.
- C. includes the release of various cytokines in response to an antigen.
- D. involves B cells that recognise antigens or pathogens that are circulating in the lymph or blood.

Question 8

Suppressor T cells

- A. act as an infection recedes.
- B. recognise class II antigens and stimulate B cells.
- C. secrete a protein that stimulates other T cells and B cells.
- D. assist in the reproduction of B cells and plasma cells.

Question 9

Basophils

- A. cannot perform phagocytosis.
- B. help in blood clotting.
- C. produce histamine that induces inflammation.
- D. are the most abundant type of granulocyte.

Question 10

If an infection occurs and elicits an immune response with no disease, the patient has a/an

- A. acute infection.
- B. sub-clinical infection.
- C. chronic infection.
- D. macroscopic organism causing the infection.

SECTION B – SHORT-ANSWER QUESTIONS

Instructions for Section B

Answer **all** questions in the spaces provided. Write using blue or black pen.
Unless otherwise indicated, the diagrams in this booklet are **not** drawn to scale.

Question 1 (1 mark)

What is an antigen?

Question 2 (1 mark)

Describe the role of the immune system.

Question 3 (2 marks)

Organisms may have barriers which prevent pathogens from entering their systems.

List the barriers to infection in humans.

Question 4 (2 marks)

Explain the difference between cell-mediated immunity and antibody-mediated immunity.

Question 5 (4 marks)

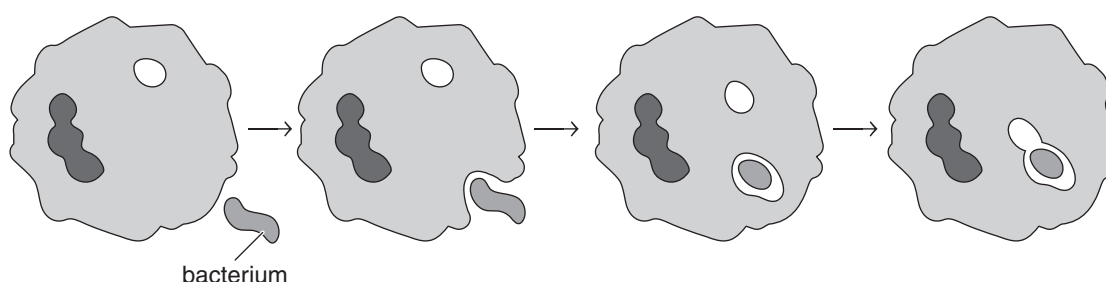
- a.** How are killer T lymphocytes activated? 1 mark

- b.** What is the stimulus for the activation of these cells? 1 mark

- c.** How are B lymphocytes activated? 1 mark

- d.** How do plasma and memory cells differ? 1 mark

Question 6 (3 marks)

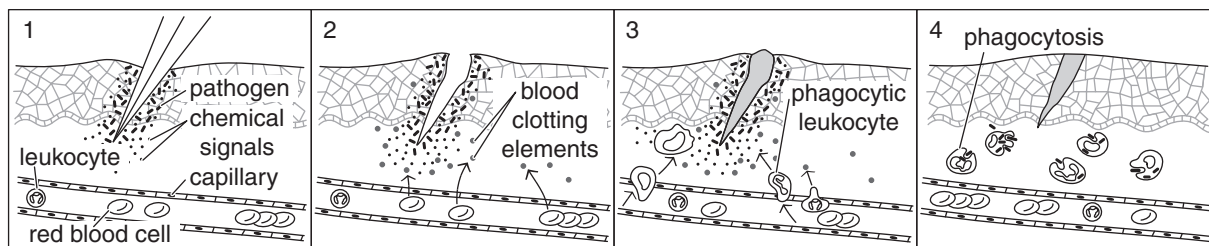


- a.** Use one word to describe the process shown in the diagram above. 1 mark

- b.** Is this response specific or non-specific? Explain your selection. 2 marks

Question 7 (3 marks)

Consider the diagram below.



- a. What is the name of the response shown in the diagram?

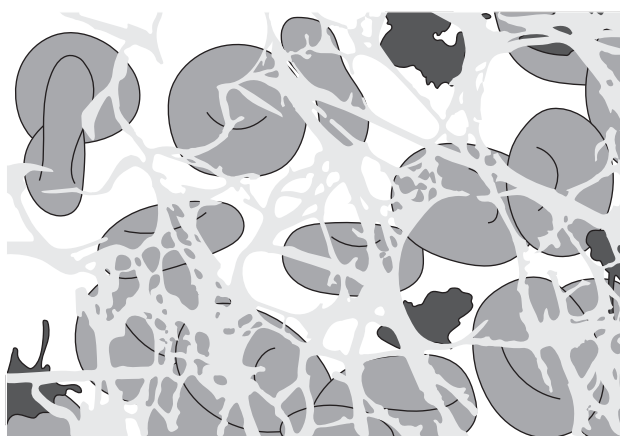
1 mark

- b. State **two** changes that are occurring in the blood vessel in the diagram above and explain their role in the immune response.

2 marks

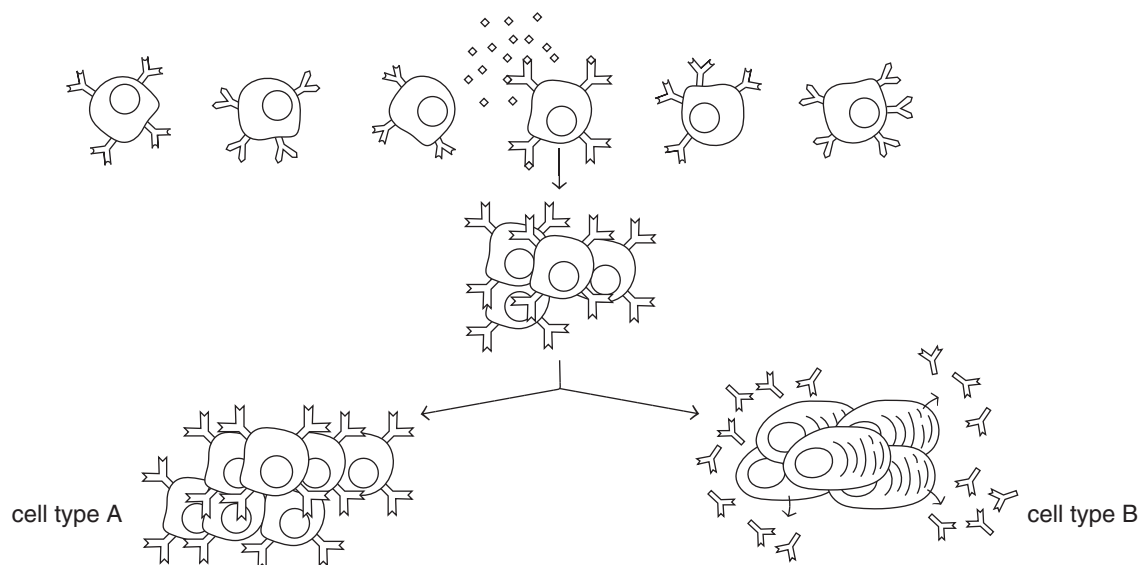
Question 8 (2 marks)

With reference to structures visible in the diagram below, describe what immune response it is illustrating and describe the process involved with this immune response.



Question 9 (5 marks)

Consider the diagram below.



- a. What process is illustrated in the diagram above? 1 mark

- b. What is the name given to cell type A? 1 mark

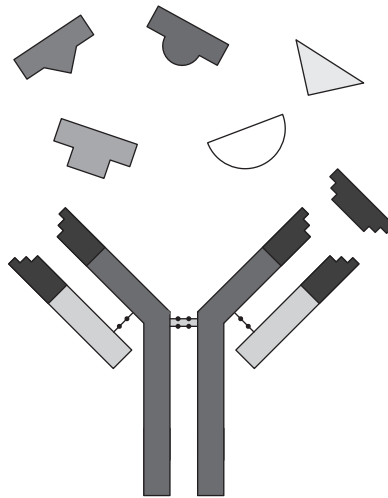
- c. What is the purpose of cell type A? 1 mark

- d. What is the name of cell type B? 1 mark

- e. What is the purpose of cell type B? 1 mark

Question 10 (5 marks)

Consider the structure below.



- a. What is the name given to the structure? 1 mark

- b. On the above diagram label

- i. the antigen binding site. 1 mark
 ii. the light chain. 1 mark
 iii. the heavy chain. 1 mark

- c. The antigen binding site is also known as the 'variable region'.
 What role does this region play in the Clonal Selection Theory? 1 mark

Question 11 (2 marks)

State the role of helper T cells in a specific immune response.
