



BIOLOGY VCE UNITS 3&4 DIAGNOSTIC TOPIC TESTS 2017

TEST 6: IMMUNITY

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.

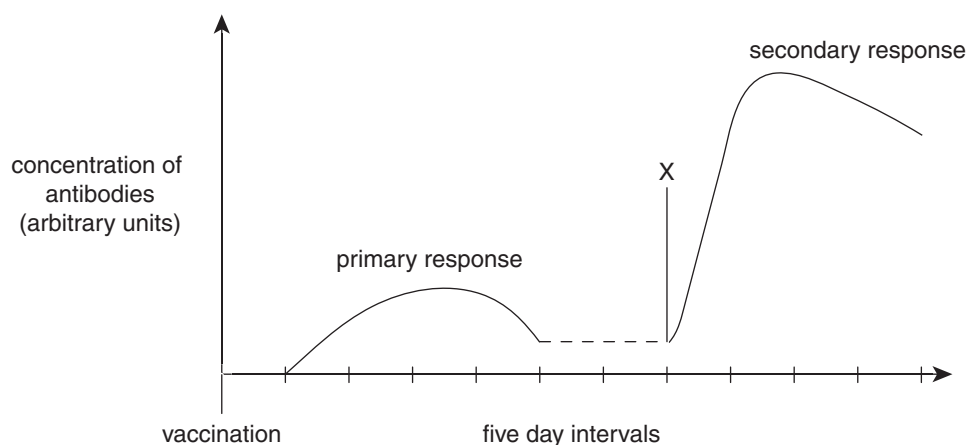
A correct answer scores 1; an incorrect answer scores 0.

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.

Use the following information to answer Questions 1 and 2.



Question 1

At point X,

- A. memory cells are activated by antigen.
- B. antibiotics are produced rapidly in response to antigen.
- C. antibodies activate antigens.
- D. T_C cells produce antibodies.

Question 2

The delay in the primary response is

- A. the time taken for the antigen to be recognised and the cells to be activated.
- B. the time required for the memory cells to synthesise antibodies.
- C. the main period a patient could succumb to an illness.
- D. indicative of prior exposure to the antigen.

Question 3

When a person is exposed to a micro-organism that induces an adaptive immune response, they have

- A. naturally acquired specific immunity.
- B. naturally acquired non-specific immunity.
- C. artificially acquired specific immunity.
- D. artificially acquired non-specific immunity.

Question 4

Active immunity is when antibodies

- A. are produced by plasma cell clonal selection and expansion.
- B. in breast milk protect a newborn baby.
- C. diffuse through the placenta into the unborn child.
- D. are harvested from one species and used as a vaccine in another.

Question 5

The World Health Organization (WHO) advises before travelling to areas with active poliovirus transmission, travellers from polio-free countries should ensure that they have completed the age-appropriate polio vaccine series per their respective national immunisation schedule. Adult travellers to polio-infected areas who have previously received three or more doses of OPV or IPV should also be given another one-time booster dose of polio vaccine. Travellers to polio-infected areas who have not received any polio vaccine previously should complete a primary schedule of polio vaccination before departure.

This advice should be strictly followed as

- A. you could pass on polio to the local population.
- B. the chance of encountering the virus is low.
- C. there are not enough people immunised to give herd immunity.
- D. polio is no longer a disease-causing virus.

Question 6

Multiple sclerosis (MS) is a demyelinating disease in which the insulating covers of nerve cells in the brain and spinal cord are damaged.

It is an example of

- A. an autoimmune disease.
- B. a viral disease.
- C. a bacterial disease.
- D. a genetic disorder.

Question 7

It is estimated that there are over 200 types of viruses that cause the common cold in Melbourne.

Why is this hard to eradicate?

- A. the viruses mutate at a rapid rate
- B. the viruses are more easily transmitted in cold environments
- C. it is impractical to administer 200 different vaccinations for the common cold
- D. all of the above

Question 8

If a person contains immunoglobulin E (IgE) antibodies for a particular antigen such as pollen, they are said to be sensitised to that antigen. The antibodies bind to particular cells.

These cells are

- A. B cells.
- B. neutrophils.
- C. mast cells.
- D. T cells.

Question 9

To make a monoclonal antibody to fight cancer, researchers first have to identify the right

- A. T cells.
- B. neutrophils.
- C. basophils.
- D. antigen(s).

Question 10

A microorganism that is attenuated

- A. is dead.
- B. is alive but cannot reproduce.
- C. can still reproduce.
- D. can still cause disease.

Question 11

One of the benefits of artificial passive immunisation is that

- A. there is long-term protection due to the production of memory B cells.
- B. the material is made from your own body so there is no chance of rejection.
- C. it can be administered in many different routes.
- D. there is a chance of successfully fighting the disease if the person is already infected.

Question 12

Class II markers are only present on specialised

- A. antigen-presenting immune cells.
- B. phagocytic cells.
- C. microorganisms.
- D. pollens.

Question 13

Toxoids are injected into a bushwalker after being bitten by a tiger snake.

The best remedy is for the bushwalker to be injected with

- A. antibodies raised in a rabbit.
- B. tiger snake antitoxin raised in a rabbit.
- C. tiger snake antigens.
- D. tiger snake antibodies.

Question 14

AIDS is caused by

- A. unprotected sexual contact.
- B. intravenous drug users sharing needles.
- C. sharing saliva.
- D. HIV.

Question 15

A severe peanut allergic reaction is normally treated by

- A. having small doses of peanuts.
- B. avoiding peanuts.
- C. adrenalin.
- D. antihistamines.

SECTION B – SHORT-ANSWER QUESTIONS

Instructions for Section B

Answer **all** questions in the spaces provided. Write using blue or black pen.
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Question 1 (2 marks)

What are vaccines and why are they so important?

Question 2 (1 mark)

What is the difference between natural immunity and acquired immunity?

Question 3 (1 mark)

How do vaccines and toxins differ?

Question 4 (2 marks)

Autoimmune diseases and immune deficiency diseases are really the same type of diseases.

Is this statement true or false? Explain.

Question 5 (1 mark)

Explain why passive immunity provides short-term immunity.

Question 6 (2 marks)

a. What is tissue typing?

1 mark

b. How is rejection of donor tissue overcome?

1 mark

Question 7 (1 mark)

Why are some people are more resistant to diseases than others?

Question 8 (1 mark)

Asthmatics and hay fever sufferers are said to be hypersensitive.
Explain what this means.

Question 9 (2 marks)

AIDS is a disease that is particularly difficult to treat.

a. What type of disease is AIDS?

1 mark

b. Why is it so difficult to treat?

1 mark

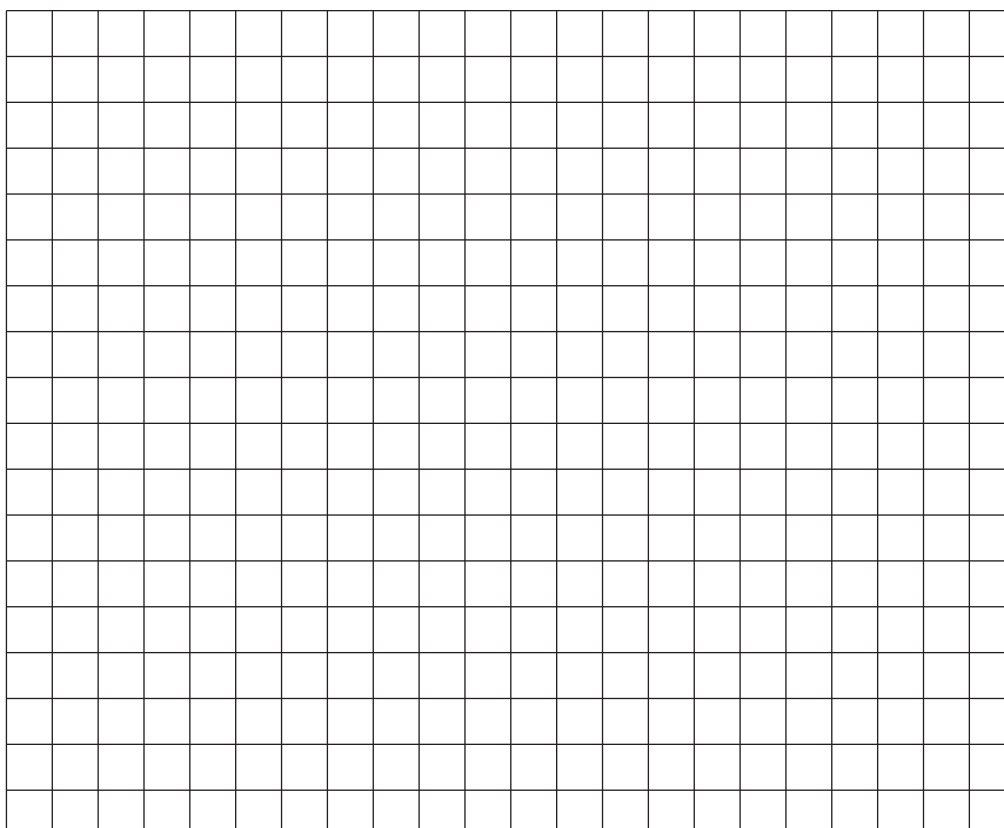
Question 10 (8 marks)

Anna contracted the measles, a contagious disease, when she played with her friend Lisa from Prep. However, Anna was not affected when her brother contracted the measles last week.

Keeping this in mind, use the following data collected on the production of antibodies within Anna's immune system to answer the following questions.

Days after exposure	Level of antibodies in blood (arbitrary units)	Days after exposure	Level of antibodies in blood (arbitrary units)
Response A		Response B	
0	0	0	22
1	33	1	48
2	46	2	69
3	57	3	100
4	64	4	136
5	66	5	168
6	62	6	182
7	53	7	176
8	44	8	165
9	32	9	158
10	22	10	145

- a. Correctly plot the level of antibodies produced within Anna for both response A and B. 4 marks



- b.** Indicate on the above graph which is the primary and secondary immune responses. 1 mark
- c.** With reference to specific immunity, explain the difference in Anna's primary and secondary immune response. 3 marks

Question 11 (4 marks)

There is a push by health workers to encourage breastfeeding of all babies and to continue to breastfeed until the baby is older.

- a.** What are the benefits of breastfeeding in terms of immunity? 2 marks

- b.** What are the terms used to describe this type of immunity? 1 mark

- c.** Does this type of immunity provide the baby with lifelong protection? Explain. 1 mark
