

Diseases and immunity practice questions

16 questions • 45 marks • mark scheme at the back

For Cambridge IGCSE Biology 0610 (and 0970, which has the same content). **Supplement** is Extended content, only examined on Papers 2 and 4.

Name

Total / 45

Pathogens and transmission Spec 10.1.1–10.1.5, 10.1.16–10.1.17

1 What is a pathogen? [1 mark]

- A. ☐ A disease-causing organism
- B. ☐ A protein that fights disease
- C. ☐ A cell that engulfs bacteria
- D. ☐ A chemical that kills bacteria

2 Define the term transmissible disease and give two ways in which a pathogen can be transmitted indirectly. [3 marks]

3 Which is an example of transmission by direct contact? [1 mark]

- A. ☐ Breathing in droplets from the air
- B. ☐ Eating contaminated food
- C. ☐ Passing a pathogen in blood
- D. ☐ Touching a contaminated door handle

4 Describe four ways the body defends itself against pathogens. [4 marks]

5 Explain why a clean water supply and sewage treatment are important in controlling the spread of disease. **[4 marks]**

6 Which action helps to stop pathogens spreading from hands to food? **[1 mark]**

- A. ☐ Washing hands before preparing food
- B. ☐ Keeping food in sunlight
- C. ☐ Eating food quickly
- D. ☐ Adding salt to water

7 **Supplement** **[4 marks]**

Cholera is a disease caused by a bacterium. Explain how the cholera bacterium causes diarrhoea.

8 Explain how poor waste disposal could increase the spread of a transmissible disease. **[3 marks]**

Immunity

Spec 10.1.6–10.1.15

Supplement

9 **Supplement** **[1 mark]**

Antibodies are:

- A. ☐ lipids with a shape complementary to an antigen
- B. ☐ proteins with a shape complementary to an antigen
- C. ☐ carbohydrates with a shape identical to an antigen
- D. ☐ white blood cells that engulf pathogens

10

Supplement

[4 marks]

Describe how antibodies help to destroy a pathogen.

11

Supplement

[3 marks]

Define active immunity and state two ways in which it can be gained.

12

Supplement

[3 marks]

Outline the process of vaccination.

13

Supplement

[1 mark]

What gives long-term immunity after vaccination?

- A. ☐ Antibodies from the mother
- B. ☐ Memory cells
- C. ☐ Stomach acid
- D. ☐ Mucus

14

Supplement

[3 marks]

Explain how vaccinating a large part of a population helps control the spread of a disease.

15

Supplement

[5 marks]

A baby is breast-fed. Explain how breast-feeding helps to protect the baby against disease, and why this protection does not last.

16

Supplement

[4 marks]

Compare active immunity with passive immunity.

Mark scheme

One mark for each point unless a maximum is given. Words in brackets are not needed for the mark.

1. [1]

A A (1)

2. [3]

- a disease in which the pathogen can be passed from one host to another (1)
- contaminated surfaces / food / animals / air (1)
- any second different indirect route, e.g. contaminated food (1)
- allow water for food; ignore touching without reference to a surface
- Max 3

3. [1]

C C (1)

4. [4]

- skin forms a barrier / stops pathogens entering (1)
- hairs in the nose trap pathogens / dust (1)
- mucus traps pathogens (1)
- stomach acid kills pathogens (1)
- white blood cells destroy pathogens / ingest / make antibodies (1)
- Max 4

5. [4]

- water can contain pathogens / be contaminated (1)
- clean (treated) water has the pathogens removed / killed (1)
- so people do not swallow pathogens in drinking water (1)
- sewage contains pathogens (1)
- treating sewage stops it contaminating drinking water / food (1)
- Max 4

6. [1]

A A (1)

7. [4] **Supplement**

- bacterium produces a toxin (1)
- toxin causes chloride ions to be secreted into the small intestine (1)
- water moves into the gut from the blood (1)
- by osmosis (1)
- allow Cl⁻ for chloride ions; reject chlorine / chlorine ions
- Max 4

8. [3]

- waste may contain pathogens (1)
- pathogens can contaminate food / water / surfaces (1)
- people then take in the pathogens / pathogens passed to new hosts (1)
- allow animals attracted to waste spread the pathogens

9. [1] Supplement

B B (1)

10. [4] Supplement

- pathogen has antigens / antigens have specific shapes (1)
- antibody has a complementary shape / fits the antigen (1)
- antibody binds to the antigen (1)
- pathogen destroyed directly (1)
- or pathogen marked for destruction by phagocytes (1)
- reject antibodies engulf / eat pathogens; reject antibody described as a cell
- Max 4

11. [3] Supplement

- defence against a pathogen by antibody production in the body (1)
- after an infection by a pathogen (1)
- by vaccination (1)

12. [3] Supplement

- weakened pathogens or their antigens are put into the body (1)
- antigens stimulate lymphocytes to produce antibodies / an immune response (1)
- memory cells are produced that give long-term immunity (1)

13. [1] Supplement

B B (1)

14. [3] Supplement

- fewer people can become infected / fewer susceptible hosts (1)
- pathogen is passed on less often / harder to find a new host (1)
- so people who are not vaccinated are less likely to be infected (1)

15. [5] Supplement

- breast milk contains antibodies from the mother (1)
- antibodies protect the baby against pathogens (1)
- baby's immune system is not fully developed / baby has not made its own antibodies yet (1)
- this is passive immunity (1)
- memory cells are not produced (1)
- so protection is short-term / ends when antibodies are broken down (1)
- Max 5

16. [4] Supplement

- active: antibodies made by the person's own lymphocytes; passive: from another individual (1)
- active: gained by infection or vaccination; passive: via placenta or breast milk (1)
- active: memory cells produced; passive: not produced (1)
- active: long-term; passive: short-term (1)