Model Answers: Easy

1

The correct answer is **B** because **macrophages** are found in tissues and secrete **cytokines** that activate other cells in the immune system.

A is incorrect as **macrophages** do not produce antigens, these are the molecules that induce an immune response.

C is incorrect as **macrophages** do leave the blood and settle in organs removing foreign matter, but do not produce cytotoxins.

D is incorrect as **macrophages** do not accumulate at the site of inflammation, this is the role of **neutrophils**, neutrophils release **cytokines** to activate other cells in the immune system.

2

The correct answer is **C** because **memory cells** are produced from both **T-lymphocytes** and **B-lymphocytes**

A, B & **D** are incorrect as **phagocytes** engulf and digest foreign bodies.

3

The correct answer is **C** because:

- Only one type of **B-lymphocyte** has an antigen receptor that is specific to the shape of the antigen that has entered the body
- This cell, when activated, **divides** rapidly by mitosis. The cloned cells produced go on to develop into **plasma cells** and **memory cells**
- **Plasma cells** produce **antibodies**

A is incorrect as this statement describes **phagocytosis.**

B is incorrect as cytokines are produced by **T-lymphocytes** that stimulate B-lymphocytes to develop into **plasma cells** and secrete antibodies.

D is incorrect as this statement describes **killer T-lymphocytes.**

4

The correct answer is **C** because:

- The **cell-mediated response** uses T-lymphocytes, these are produced in the **bone marrow** and mature in the **thymus**
- When they are mature they travel around the body in the blood, until they come into contact with an **antigen** they can respond to
- This activates the **T-lymphocyte** and it will divide to produce a clone of cells

A is incorrect as **B-lymphocytes** produce antibodies.

B is incorrect as **phagocytes** engulf and digest foreign molecules.

D is incorrect as pathogens activate the immune system. The term pathogen encompasses all **disease causing** viruses, bacteria and other microorganisms.

5

The correct answer is **B** because **B-lymphocytes** produce antibodies once a foreign antigen is detected and they have been activated.

A & **C** are incorrect as **antigens** are foreign substances/cell recognition markers that induce an immune response in the body.

D is incorrect as **T-lymphocytes** do not produce antibodies.

6

The correct answer is **A** because **antigens** can be toxins or other substances that the body recognizes as non-self, these trigger an immune response to remove non-self material from the body.

B is incorrect as **antigens** are not only found on bacteria. Usually the term 'antigen' refers to any cell recognition marker found embedded in the cell surface membrane (usually glycolipids or glycoproteins) which are recognized as 'foreign'.

C is incorrect as this statement describes the structure of **antibodies.**

D is incorrect as antigen presentation takes place in macrophages or body cells.

7

The correct answer is **A** because:

- The **cell surface proteins** are most often specific to the pathogen.
- As the proteins are specific they are often the **antigens** that the immune cells of the body can recognize on the invading pathogen as non-self

B is incorrect as **phospholipids** are the building blocks of the cell membrane.

C is incorrect as carbohydrates are present on the cell surface but attached to proteins as **glycoproteins.**

D is incorrect as **nucleic acids** make up DNA and this would not be found on the surface of the cell to help identify it as non-self.

8

The correct answer is **B** because:

- **Goblet cells** produce mucus, these would be activated by inhaling tiny particles to trap and remove these from the **pulmonary system**
- **B-lymphocytes** would be activated to make complementary **antibodies** to any non-self macromolecules inhaled

A & **C** are incorrect as both options state that the **B-lymphocytes** would be less active – they would be more active.

D is incorrect as this option states that the mucus-producing **goblet cells** would not be active.

9

The correct answer is **C** because:

- The precursor cell to **macrophages** (monocytes) are made from myeloid stem cells in the bone marrow which are released into the blood stream
- Monocytes specialise into **macrophages** in the body tissues. The role of macrophages is dependent on their location; they work to remove old/dead cells and foreign matter

A is incorrect as the lymph nodes filter the lymph fluid.

B is incorrect as monocytes are found in the blood plasma.

D is incorrect as monocytes will develop into macrophages in the tissue fluid of the organs of the body

10

The correct answer is **D** because T killer cells 'punch' holes in the membrane of the infected body cell by insertion of perforins into the membrane.

A is incorrect as phagocytosis is carried out by neutrophils and macrophages.

B is incorrect as antibodies are secreted by plasma cells which are derived from B-lymphocytes.

C is incorrect as anti-toxins are produced by B-lymphocytes (they are a special type of antibody).